

# THE JOURNAL OF MEDICAL EDUCATION

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THE ASSOCIATION OF AMERICAN MEDICAL COLLEGES



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A New Book! | Perez-Tamayo — Mechanisms of Disease

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*Coming in August - - -*

*The 2nd Edition*

## **THE NEUROANATOMIC BASIS FOR CLINICAL NEUROLOGY**

**By**

**Talmage L. Peele,  
M.D.**

Associate Professor of  
Anatomy, Duke Uni-  
versity School of  
Medicine, Durham,  
North Carolina

**\* 608 pages**

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**\* In press**

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Of particular interest to the student are the results of microelectrode studies, temporal lobe removal, and electron microscopic study. In an effort to provoke interest and incentive to learning, clinical case material has also been included in this work.

A number of new illustrations have been added throughout, and some of the old ones have been improved. Photographs of brain stem sections in three planes are included and the use of line sketches to indicate the location of these sections is intended to aid the student's understanding of the subject. This and many other changes such as an atlas of brain stem sections have been made in answer to the suggestions of users of the previous editions.



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Official Publication of the Association of American Medical Colleges

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*Galley proofs* will be mailed to authors for correction before publication and should be returned within 48 hours after receipt.

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*Medical Education Forum* includes editorials, letters, comments, criticisms, and excerpts from important addresses.

*News from the Medical Schools:* Material for this section should be transmitted to the News Editor, Miss Neva Resek, 2530 Ridge Avenue, Evanston, Illinois. Announcements of major faculty and administrative appointments, news of distinguished visitors and significant educational developments will be included. It is not possible to publish notices on grants-in-aid for scientific research.

*Items of Current Interest:* Audio-visual news and notices from national and federal agencies appear in this section.

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New 1961 Edition

# MAINGOT'S ABDOMINAL OPERATIONS

By Rodney Maingot, F.R.C.S. (Eng.)

Consulting Surgeon, the Royal Free Hospital and  
the Southend General Hospital, London

With 36 Contributing Authorities, American and British

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CONTENTS: Anatomy. Embryology of the Female Generative Organs. Gynecological History, Examination, and Operations. Physiology of Menstruation and Pregnancy. Cyclical Changes in the Ovary. Clinical Features of Menstruation. Congenital Anomalies of the Female Generative Organs. Hermaphroditism. Diseases of the Vulva. Diseases of the Vagina. Cervicitis and Cervical Polyp. Carcinoma of the Cervix. Relaxations, Fistulas, and Malpositions. Hyperplasia of the Endometrium and Endometrial Polyps. Adenocarcinoma of the Corpus Uteri. Myoma of the Uterus. Adenomyosis of the Uterus. Sarcoma of the Uterus. Acute Pelvic Inflammatory Disease. Chronic Pelvic Inflammatory Disease. Tuberculosis of Female Generative Organs. Tumors of the Tube, Parovarium, and Uterine Ligaments. Benign Tumors of the Ovary. Malignant Tumors of the Ovary; Carcinoma of the Ovary. Functioning Tumors of the Ovary. Endometriosis. Ectopic Pregnancy. Pregnancy Conditions in Gynecological Practice. Leukorrhea. Infertility. Amenorrhea. Abnormal Uterine Bleeding. The Management of the Menopause. Dysmenorrhea and Allied Conditions. Clinical Cytology.

By EDMUND R. NOVAK, A.B., M.D., Assistant Professor of Gynecology,  
Johns Hopkins Medical School; Gynecologist, Johns Hopkins, Bon Secours, Hospital  
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1961

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Case data courtesy Henry Dolger, M.D.

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72nd Annual Meeting, Nov. 13-15, 1961  
Queen Elizabeth Hotel, Montreal, Canada

### 1961

#### JUNE

AMERICAN COLLEGE OF ANGIOLOGY, Savoy-Hilton Hotel, New York City, June 23-25. Alfred Halpern, Ph.D., 11 Hampton Court, Great Neck, N. Y., Secretary.

AMERICAN COLLEGE OF CHEST PHYSICIANS, Hotel Commodore, New York City, June 22-26. Mr. Murray Kornfeld, 112 E. Chestnut St., Chicago, Executive Director.

AMERICAN DERMATOLOGICAL ASSOCIATION, INC. (members only), Castle Harbour Hotel, Tucker's Town, Bermuda, June 16-20. Dr. Wiley M. Sams, 25 S. E. Second Ave., Miami 32, Fla., Secretary.

AMERICAN MEDICAL ASSOCIATION, ANNUAL MEETING, New York City, June 25-30. Dr. F. J. L. Blasingame, 535 N. Dearborn, Chicago 10, Executive Vice-President.

SOCIETY OF NUCLEAR MEDICINE, Penn Sheraton Hotel, Pittsburgh, June 14-17. Mr. Samuel N. Turiel, 430 N. Michigan Ave., Chicago 11, Executive Administrator.

#### JULY

INTERNATIONAL COLLEGE OF SURGEONS, NEW ENGLAND REGIONAL MEETING, Chatham Bars Inn, Chatham, Cape Cod, Mass., July 1-4. Dr. M. Leopold Brodny, 4646 N. Marine Dr., Chicago 40, Treasurer.

#### AUGUST

AMERICAN CONGRESS OF PHYSICAL MEDICINE AND REHABILITATION, Sheraton-Cleveland Hotel, Cleveland, Aug. 27-Sept. 1. Dorothea C. Augustin, 30 N. Michigan Ave., Chicago 2, Executive Secretary.

NATIONAL MEDICAL ASSOCIATION, INC., Commodore Hotel, New York City, Aug. 7-10. Dr. John Glivens, 1108 Church St., Norfolk, Va., Executive Secretary.

#### SEPTEMBER

AMERICAN ASSOCIATION OF MEDICAL CLINICS, Barbizon Plaza Hotel, New York, Sept. 27-29. Dr. Joseph B. Davis, Davis Clinic, 181 N. Washington St., Marion, Ind., Secretary-Treasurer.

AMERICAN ASSOCIATION FOR THE SURGERY OF TRAUMA, Drake Hotel, Chicago, Sept. 28-30. Dr. William T. Fitts Jr., 3400 Spruce St., Philadelphia 4, Secretary.

AMERICAN HOSPITAL ASSOCIATION, Atlantic City, Sept. 25-28. Mr. Maurice J. Norby, 840 North Lake Shore Dr., Chicago 11, Secretary.

COLLEGE OF AMERICAN PATHOLOGISTS, Seattle, Sept. 30-Oct. 3. For information write: Dr. A. H. Dearing, Prudential Plaza, Suite 2115, Chicago 1.

#### OCTOBER

ACADEMY OF PSYCHOSOMATIC MEDICINE, Emerson Hotel, Baltimore, Md., Oct. 12-14. Dr. George Sutherland, 3700 N. Charles St., Baltimore, Program Chairman.

AMERICAN ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY, Palmer House, Chicago, Oct. 8-13. Dr. William L. Benedict, 15 Second Street S.W., Rochester, Minn., Executive Secretary.

AMERICAN ACADEMY OF PEDIATRICS, Palmer House, Chicago, Oct. 2-5. Dr. E. H. Christopherson, 1801 Hinman Ave., Evanston, Ill., Executive Director.

AMERICAN ASSOCIATION OF MEDICAL RECORD LIBRARIANS, Benjamin Franklin Hotel, Philadelphia, Oct. 9-12. Miss Doris Gleason, 840 N. Lake Shore Dr., Chicago 11, Executive Director.

AMERICAN COLLEGE OF GASTROENTEROLOGY, Hotel Cleveland, Cleveland, Oct. 22-25. Mr. Daniel Weiss, 33 West 60th St., New York 23, Executive Director.

AMERICAN COLLEGE OF SURGEONS, Conrad Hilton Hotel, Chicago, Oct. 2-6. Dr. William E. Adams, 40 E. Erie St., Chicago 11, Secretary.

AMERICAN MEDICAL WRITERS' ASSOCIATION, New York City, Oct. 6-7. Leslie L. Lewis, L.L.B., Ravenswood Hospital, 1931 W. Wilson Ave., Chicago 40, Asst. Secretary.

AMERICAN SOCIETY OF ANESTHESIOLOGISTS, INC., Statler Hilton, Los Angeles, Oct. 22-27. Mr. John W. Andes, 515 Busse Highway, Park Ridge, Ill., Executive Secretary.

COLLEGE OF AMERICAN PATHOLOGISTS, Olympic Hotel, Seattle, Oct. 1-7. Dr. Arthur H. Dearing, Prudential Plaza, Suite 2115, Chicago, Executive Director.

#### NOVEMBER

AMERICAN MEDICAL ASSOCIATION, CLINICAL MEETING, Denver, Nov. 27-30. Dr. F. J. L. Blasingame, 535 N. Dearborn, Chicago 10, Executive Vice-President.

AMERICAN MEDICAL WOMEN'S ASSOCIATION, Cleveland, November. Miss Lillian T. Majally, 1790 Broadway, New York 19, Executive Director.

AMERICAN PUBLIC HEALTH ASSOCIATION, Cobo Hall, Detroit, Nov. 13-17. Dr. Berwyn F. Mattison, 1790 Broadway, New York 19, Executive Director.

ASSOCIATION OF MILITARY SURGEONS (68TH ANNUAL CONVENTION), Mayflower Hotel, Washington, D.C., Nov. 5-8. Col. Robert E. Bitner, U.S.A., Ret., 1726 Eye St., N.W., Washington 6, D.C., Secretary.

INTERSTATE POSTGRADUATE MEDICAL ASSOCIATION OF NORTH AMERICA, Cleveland Auditorium, Cleveland, Nov. 13-16. Mr. Roy T. Ragatz, Box 1109, Madison 1, Wis., Executive Director.

#### DECEMBER

AMERICAN ACADEMY OF DERMATOLOGY AND SYPHILOLOGY, Palmer House, Chicago, Dec. 2-7. Dr. Robert R. Kierland, Mayo Clinic, Rochester, Minn., Secretary-Treasurer.



New 1961 Book**Boutwell—Clinical Chemistry**By **JOSEPH H. BOUTWELL, JR., M.D., Ph.D.**Associate Professor of Physiological Chemistry, Temple University School of Medicine;  
Director, Clinical Chemistry Laboratory, Temple University Hospital, Philadelphia

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Hereditary and Metabolic Disorders, University of Utah, College of Medicine, Salt Lake City

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New 1961 Edition**Levinson & MacFate—Clinical Lab. Diagnosis**By **SAMUEL A. LEVINSON, M.D., Ph.D.**Director of Laboratories, University of Illinois,  
Research and Educational Hospitals, Chicagoand **ROBERT P. MacFATE, M.S., Ph.D.**

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(1) Matthias, J. Q.; Misiewicz, J. J., and Scott, R. B.: *Brit. M. J.* 2:1837-1840 (Dec. 24) 1960.

(2) Coggins, P. R.; Ravdin, R. G., and Eisman, S. H.: *Cancer* 13:1254-1260 (Nov.-Dec.) 1960.

(3) Papac, R.; Petrakis, N. L.; Amini, F., and Wood, D. A.: *J.A.M.A.* 172:1387-1391 (March 26) 1960.



**DOSAGE:** For neoplasms relatively susceptible to Cytoxan—Patients with lymphomas and other neoplasms believed to be relatively susceptible to Cytoxan therapy are given an initial dose of 2.5 mg./Kg./day intravenously. White blood counts and platelet determinations should be made daily or twice weekly and the dosage adjusted accordingly. Intravenous infusions should be continued for at least 6 days unless otherwise indicated. A leukopenia of between 1500 and 5000 cells per cu. mm. (or lower) may be expected between the tenth and fourteenth day. In the presence of a leukopenia of less than 2000/cu. mm. Cytoxan should be discontinued until the white cell count returns to 2000 to 5000 (usually within a week). Dosage is subsequently adjusted as indicated by the patient's objective response and the leukocyte count. If the patient is subjectively improved, if the size of the tumor has decreased, or if the white cells are satisfactorily maintained between 2000 and 5000/cu. mm. oral dosage may be instituted equivalent to intravenous dosage.

Thrombocytopenia is rarely observed on this regimen. If platelet counts of less than 100,000/cu. mm. are observed, the patient should be watched carefully. If platelets continue to decrease, Cytoxan should be discontinued.

The patient who has had previous treatment with alkylating agents, or x-ray, or is debilitated may be more susceptible to bone marrow depression, and initial Cytoxan doses should be more conservative than the above. Such patients should have more frequent hematologic evaluation. Good medical practice demands access to a reliable hematologic laboratory when using Cytoxan.

For neoplasms relatively resistant to Cytoxan—Patients with carcinomas and other malignant neoplasms believed to be less susceptible to Cytoxan therapy are given a dose of 4 to 8 mg./Kg./day intravenously. Unless there are indications to the contrary, this dose is continued for 6 days, then stopped. Leukopenia usually ensues on the tenth to fourteenth day after the first dose of Cytoxan. Thrombocyte reduction is not common, and platelets may actually increase. The leukocyte count promptly returns toward normal levels in most cases, and as it begins to increase, sufficient Cytoxan is administered to maintain it near 2000 to 5000/cu. mm. This may be accomplished by two intravenous injections weekly, or by oral administration, or by a combination of both routes. An oral dosage of 50 to 200 mg. daily or an intravenous injection of 5 mg./Kg. twice weekly will usually suffice.

The platelet and leukocyte counts should be followed carefully, and the prior treatment history of patients carefully evaluated as delineated above.

**Leukopenia as a guide to adequacy of dosage**—The best objective measure for dosage seems to be the number of circulating white blood cells. This is used as an index of the activity of the hematopoietic system, especially the bone marrow. The mechanism by which Cytoxan causes a reduction in the level of white blood cells is not known, but cessation of dosage results in an increase in the level, indicating that the hematopoietic system had not been permanently affected. When large doses (8 mg./Kg./day for 6 days) are given initially, the white cell count falls rapidly. Following the cessation of the 6-day course, the white cells may continue to decline for as long as 8 days and then increase. The reduction of the white cell count during Cytoxan therapy and its subsequent increase when therapy is discontinued can be repeated in the same patient. Maximal reduction in leukocyte count indicates the maximal permissible Cytoxan level for therapeutic effect. Leukopenic patients must be watched carefully for evidence of infection.

Total white blood cell and thrombocyte counts should be obtained 2 or more times weekly in order to evaluate therapy and to adjust dosage.

**SIDE EFFECTS:** Although Cytoxan is related to nitrogen mustard, it has no vesicant effect on tissue. It does not traumatize the vein when injected intravenously, nor does it cause any localized tissue reaction following extravasation. It may be administered intravenously, intramuscularly, intraperitoneally, intrapleurally or directly into the

tumor, when indicated. It is apparently active by each of these routes.

Nausea and vomiting are common and depend on dose and on individual susceptibility. However, many investigators accept the nausea and vomiting in favor of maintaining maximal therapy. The vomiting can be controlled with antiemetic agents.

Alopecia is a frequent side reaction to Cytoxan therapy. It has been observed in 28% of the patients studied in this country. The incidence is greater with larger doses. The loss of hair may first be noted about the 21st day of therapy and may proceed to alopecia totalis. This effect is reversed following discontinuance of Cytoxan; during reduced maintenance therapy, hair may reappear. It is essential to advise the patient in advance concerning this effect of the drug.

Dizziness of short duration and of minor degree has occasionally been reported.

Leukopenia is an expected effect and can be used as a guide to therapy. Thrombocytopenia may occur, especially after large doses. The leukocyte or platelet counts of an occasional patient may fall precipitously after even small doses of Cytoxan, as with all alkylating agents. The drug should be discontinued in such patients and reinstituted later at lower dosage after satisfactory hematologic recovery has occurred. Prior treatment with x-ray or with other chemotherapeutic agents frequently causes an earlier or exaggerated leukopenia or thrombocytopenia after Cytoxan medication. Only rarely has there been a report of erythrocyte or hemoglobin reduction.

**ADMINISTRATION:** Add 5 cc. sterile water (Water for Injection, U.S.P.) to 100 mg. of Cytoxan in the sterile vial (add 10 cc. to 200 mg. vial). Shake, allow to stand until clear, remove with sterile syringe and needle and inject.

The freshly prepared solution of Cytoxan may be administered intravenously, intramuscularly, intraperitoneally, intrapleurally, or directly into the tumor. The solution should be administered promptly after being made but is satisfactory for use for three hours after preparation.

If the patient is receiving a parenteral infusion, the Cytoxan solution may be injected into the rubber tubing if the solution is glucose or saline.

No thrombosis or thrombophlebitis has been reported from injections of Cytoxan. Extravasation of the drug into the subcutaneous tissues does not result in local reactions.

**PRECAUTIONS:** Cytoxan should not be given to any person with a severe leukopenia, thrombocytopenia, or bone marrow infiltrated with malignant cells. It may be given with suitable precautions to patients who have had recent x-ray treatment, recent treatment with a cytotoxic agent, a surgical procedure within 2-3 weeks, or debilitated patients.

**AVAILABILITY:** Cytoxan is available as follows:

Cytosan for Injection, 100 mg., a sterile dry-filled vial containing 100 mg. cyclophosphamide and 45 mg. sodium chloride. Packaged, 12 vials per carton.

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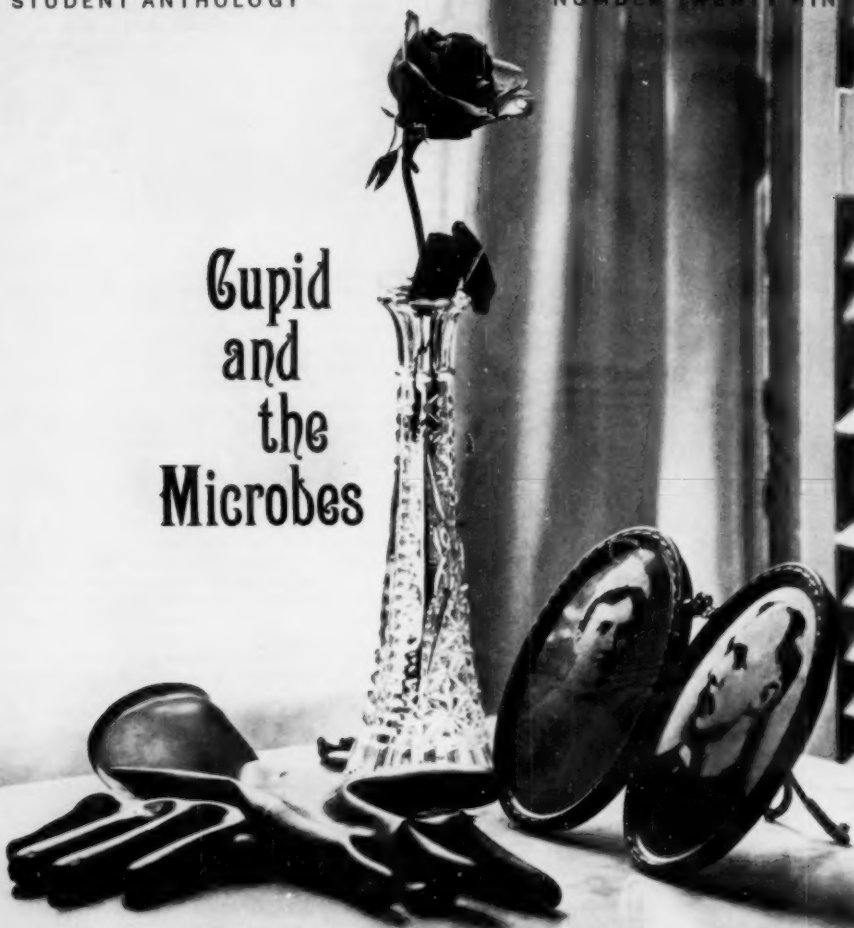
For a copy of the Cytoxan brochure, or other additional information on Cytoxan, communicate directly with the Medical Department, Mead Johnson Laboratories, Evansville 21, Indiana.



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—Jürgen Thorwald: *The Century of the Surgeon*, New York, Pantheon Books, Inc., 1957, pp. 295-301. (Photographic portraits from Crowe, Samuel, Halstead of Johns Hopkins, *The Man and His Men*, 1937. Courtesy of Charles C Thomas, Publisher, Springfield, Illinois.)



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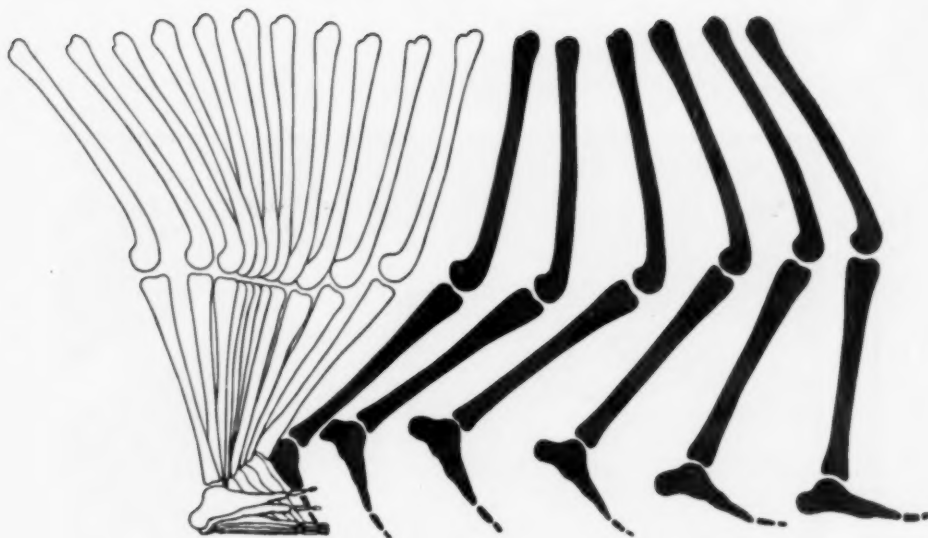
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Myristyl-gamma-picolinium  
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1. Norcross, B. M., and Winter, J. A.: Methylprednisolone acetate: a single preparation suitable for both intra-articular and systemic use, *New York J. Med.* 61:552 (Feb. 15) 1961.

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# The Journal of MEDICAL EDUCATION

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# *The Journal of* MEDICAL EDUCATION

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## The University Hospital Internship in 1960: A Study of the Programs of 27 Major Teaching Hospitals\*

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THE COMMITTEE ON INTERNSHIPS, RESIDENCIES, AND GRADUATE MEDICAL  
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\* This study was supported by a grant from the W. K. Kellogg Foundation to the Association of American Medical Colleges and supervised by its Committee on Internships, Residencies, and Graduate Medical Education.

† Director of the study, on leave of absence from the Highland Hospital of Rochester and the University of Rochester School of Medicine and Dentistry; currently Associate Dean and Assistant Professor of Medicine, Cornell University Medical College.

‡ In addition to these, Dr. George N. Aagaard, Dean of the University of Washington School of Medicine, and Dr. Lyman M. Stowe, Associate Dean of Stanford University School of Medicine, were members of the committee during the preliminary phase of the study.

## PREFACE

From the beginning we shall state exactly what this study proposed to do and what it did not propose to do. It proposed to look carefully at the educational aspects of the internship programs of 27 general hospitals, each of which was a major teaching hospital of one or more medical colleges. The methods used to accomplish this are outlined in Chapter II. We recognize that the task was large and the methods faulty, but we hope that the effort expended has resulted in a body of information not previously available in this form.

The study did not intend to inspect, for purposes of approval or disapproval, any of the programs examined. It did not attempt to determine how many interns a hospital should have, nor to study the so-called intern shortage. Each cooperating hospital and medical school participated voluntarily, but the study had official sanction from the Association of American Medical Colleges. The primary objective was to study the internship, but for obvious reasons some of the data pertain to other, related years of medical education.

The interpretations and conclusions are those of the study director and the committee. Throughout the duration of the study the committee members maintained an active interest in it, and an attempt was made to keep them informed about its progress and to seek their advice and counsel. As individuals, and as a group, we have certain biases which inevitably exerted their influence on all aspects of the study. We could not eliminate these, but we have made a conscious effort to minimize their effects in presenting the data.

Thirty-nine hospitals and 40 medical colleges with which they were associated participated in one or more phases of the study. The spirit with which the medical and administrative staffs of these institutions received the study personnel, and the splendid way in which they cooperated to make available the information which we sought, are largely responsible for whatever success we have had. To them, we express our sincere appreciation for this assistance.

The study director is especially grateful to the Administrator and Trustees of the Highland Hospital of Rochester, and to the University of Rochester School of Medicine and Dentistry, for granting him a leave of absence to conduct the study. To the committee members he is indebted for their patience, understanding and guidance. Finally, but in no sense least, we express our appreciation to the 1,200 interns who answered our questionnaire and to the students and residents with whom we talked.

DEFINITIONS<sup>1</sup>

## FACULTY

*Full-Time Faculty Member.*—A member of the faculty who devotes all his time to medical school activities, is paid a salary, and receives no fees for other professional services.

*Geographic Full-Time Faculty Member.*—A faculty member who, although he spends full time at the medical school and its teaching hospital, devotes part of this time to medical school activities and part to private practice, conducted on the premises, which provides part or all of his income.

<sup>1</sup> All definitions except those marked with an asterisk (\*) are taken from *Medical Schools in the United States at Mid-Century*, J. E. Deitrick and R. C. Berson (New York: McGraw-Hill Book Co., Inc., 1953), and used with permission of the authors and publisher.

*Part-Time Faculty Member.*—A member of the faculty who is paid a salary for part-time work in the medical school.

*Volunteer Faculty Member.*—A member of the faculty who receives no financial compensation for his services to the medical school.

#### INSTITUTIONS

*College.*—An undergraduate college of a university which enrolls students working toward a Bachelor's degree.

*Medical School or Medical College.*—A medical school for instruction of undergraduate medical students.

*Privately supported Medical School.*—A medical school which regularly depends for its major financial support upon voluntary contributions, income from endowment, and student fees.

*Tax-supported Medical School.*—A medical school which regularly depends for its major financial support upon funds raised by taxation.

*Teaching Hospital.*—A hospital utilized by a medical school for a substantial portion of the clinical instruction of undergraduate medical students.

*Affiliated Hospital.*—A hospital granting certain privileges to a medical school for its teaching program but functioning as a separate institution.

*Associated Hospital.*—A hospital related to the medical school for purposes of improving the quality of the hospital's care of the patient and providing clinical facilities for the training of interns and residents.

*Integrated Hospital.*—A teaching hospital functioning in close cooperation with a medical school physically, administratively, and financially, but not owned by the university or the medical school.

*University-owned Hospital.*—A teaching hospital owned and operated by a university or a medical school for the purpose of teaching undergraduate students and training interns and residents.

#### PATIENTS

*In-Patient.*—A patient admitted to and occupying a bed in a hospital.

*Out-patient.*—An ambulatory patient who comes to a hospital's clinic for diagnosis and treatment.

#### PERSONNEL

*Ancillary Personnel.*—People providing services which supplement and aid in the study and care of the patient. These services include nursing; diagnostic procedures in the fields of pathology, chemistry, physiology, and radiology; as well as social, health, and welfare service.

*Technician.*—A person trained in the performance of laboratory procedures, including diagnostic and therapeutic techniques.

#### PROGRAMS AND SERVICES

*In-patient Clerkship.*—That part of the medical school curriculum in which the student is introduced to clinical medicine through the study of individual hospitalized patients.

*Internship.*—A period of hospital training, service, and education, usually of one year's duration, following graduation from medical school.

*Mixed Internship.*—An internship in which the intern spends periods of time on a limited number of hospital services.

*Rotating Internship.*—An internship in which the intern spends a period of time varying from a few weeks to 2 or more months on each of several services of a hospital, such as medicine, surgery, pediatrics, obstetrics, urology, etc.

*Straight Internship.*—An internship devoted to a single field such as surgery, medicine, pediatrics, etc.

*Medical Basic Sciences.*—Anatomy, biochemistry, pathology, microbiology, pharmacology, physiology, and other medical sciences which stem from the basic sciences of biology, chemistry, mathematics, and physics.

*Residency.*—A period of 1-5 years of special hospital training, service, and education, following the internship and designed to train the physician in a special field.

*Graduate Medical Education\*.*—All years of hospital education and training, subsequent to graduation from medical school, including both internship and residency.

*Postgraduate Medical Education\*.*—Special courses and programs for physicians in private practice, offered by schools, hospitals or medical organizations.

#### STUDENTS

*Intern.*—A graduate of a medical school serving his first period of hospital training.

*Medical Student.*—A student enrolled in a medical school as a candidate for the M.D. degree.

*Resident.*—A physician serving a more advanced period of training in a hospital than an intern.

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## CHAPTER I—BACKGROUND OF THE STUDY

The primary objective of this report is to present the findings of this study; therefore, we shall not undertake a complete review of the extensive literature on the subject of the internship. Much has been written, many criticisms made, and numerous suggestions offered concerning this first year of graduate medical education. These writings have been carefully reviewed, and a brief reference table is included; but the contributions of many others are also acknowledged. Those who are already familiar with prior publications about intern programs will recognize that some of the opinions and recommendations expressed in this report are not original with us. However, they represent our own conclusions based upon the evidence presented herein, and to that extent we plead "not guilty" to the charge of plagiarism in not citing previous authors whose similar conclusions were based upon other data.

## 1. HISTORICAL POSITION OF THE INTERN

Internships and residencies, as we know them today, seem to be descended from the positions of "house surgeon" and "house physician" which were first created in this country toward the end of the 18th century. From the very beginning, the programs of these young physicians in residence combined considerable service to the sick with "a chance to take responsibility for the hospital care of patients, under the observant eye of the leading clinician of the day" (3). Even the problem of terminology had arisen by the latter part of

the 19th century, and such terms as "junior interns," "residents," "walkers," and "externes" were used in an attempt to differentiate among the various levels of the house staff hierarchy (3).

By the early 1900's it had been recognized that a period of hospital training after medical school was desirable for all physicians and not merely a privilege to be reserved for the select few. In 1915 Minnesota became "the first school to require such training for the M.D. degree" (1). Having recognized "the need for improved standards at this level of medical education" the Council on Medical Education and Hospitals of the American Medical Association had begun to survey hospitals which offered internships and in 1914, the same year in which Pennsylvania became the first state to require an internship for licensure, published its first list of "approved internship hospitals" (1). By 1936, fifteen medical schools and nineteen states required an internship for degree and licensure, respectively, but the interest of the medical schools in this phase of medical education gradually became less definite, so that by 1955 none of them required the internship as a prerequisite for degree (1).

One of the reasons offered for eliminating the internship as a degree requirement was that, as the number of hospitals approved for internships increased, an ever greater number of medical graduates was receiving this training in programs for which the schools had no responsibility. This seems a reasonable position, for universities traditionally do



not grant credit for studies performed under conditions over which they have no control whatsoever.

## 2. THE INTERNSHIP, 1936-1960

As the apparent interest of medical schools in the internship decreased, the number of approved internships available in the United States increased enormously, so that by 1958-59, 853 approved hospitals offered 12,469 such positions. Since the number greatly exceeded the number of physicians being graduated from U.S. schools each year, the internship—already suffering from problems several decades old—was now beset with many new problems related to the great disparity between the number of available men and the number of available appointments.

From the university's viewpoint, however, a far more serious problem lay in the nature of the internship experience and its relationship to other years of medical education (4). As the "History of the A.M.A. Council" states, "When the internship became a generally recognized part of the education of the physician some forty years ago, it was designed to provide the graduate's initial contact with patients including some responsibility for their care" (1). However, after 1936 the clinical clerkship became the cornerstone of teaching in the clinical years of medical college. There is little doubt that the man who graduates today "... from a school with modern, well developed clinical clerkships, ... enters his internship far more versed in practical matters than did his father's generation" (8). Thus arose a controversy over the need for, and advisability of, continuing the internship.

A partial answer to this problem, but one which also fanned the flames of controversy, was the introduction of straight internships, which came into existence in hospitals whose residency programs began to develop rapidly. Those physi-

cians who had not experienced a clinical clerkship in medical school, and whose rotating internship had provided their first close contact with patients, felt that the straight internship would be much too limited in scope to accomplish what they had experienced. Similar protests were made by those who opposed the rapid growth of specialism and who felt that the straight internship restricted a man's interests too early in his career; and some, as far as we can tell, have objected to straight internships chiefly because they adhere to the philosophy of a uniform medical education for all physicians, at all levels, regardless of an individual's leanings and interests. However, in spite of these and other objections, the number of straight internships has increased slowly but steadily in the past 25 years.

The majority of these programs have been developed in university hospitals, but, as the figures in Table 1 of this report indicate, they do not, even now, constitute half of the internship positions available in the hospitals associated with medical colleges. Therefore, the introduction of straight internships has not answered the over-all question whether "the internship" should be continued. The controversy has become more widespread, and various groups of physicians have suggested that eliminating the internship would shorten the time required to complete formal medical training while eliminating the overlap between the student and intern years, and between the resident and intern years. Others have suggested that only in university hospitals should such a step be taken, thereby increasing the number of men available to fill appointments in other hospitals.

## 3. DO UNIVERSITY HOSPITALS NEED INTERNS?

Inasmuch as the place of the intern in the major teaching hospital associated



with a medical college has been challenged, and because medical educators are anxious to keep their programs abreast of the times, a study of internships in university hospitals seemed indicated. However, from the beginning it was clearly stated that the major concern of this study would be the educational aspects of the internship. Thus, as we understood the question, a university hospital's "need" for interns would be a matter of whether the design of the total graduate program would be more effective with or without interns. It should be immediately apparent that the obligations of these hospitals to provide service to their patients could be met without interns; therefore, this "need" for interns did not enter into our consideration.

Medical schools have not always followed the pattern of other branches of education in this country (6). In fact, the university tradition and influence have achieved prominence in medical education only since the beginning of the present century. In a sense, medical schools must now once more decide how far university standards and responsibilities are to extend. Should they cease after 4 years of medical school, as some contend, or should faculties of medicine be responsible for the entire formal medical education of those men who spend their graduate years in the university hospital? As has been pointed out above, the trend since 1936 has been for universities to drop some of their responsibility for the internship, while retaining much responsibility for the residency.

In trying to arrive at an answer to this matter of the medical school and the internship, we have not ignored the medical school's relationship to the parent university and its obligations to the community. Medicine is still trying to rid itself of some of the habits acquired when physicians were more trained than educated, and this is precisely one of

the difficulties with the internship. However, we see the university's obligation to the community as one of educating its members to the ultimate benefit of all, and we see no reason why schools of medicine should be excepted. Therefore, in the final analysis, what we have tried to do is to muster evidence for or against the proposition that the first year after medical college can and should meet the standards of graduate education as conducted elsewhere in the university.

#### 4. PREVIOUS STUDIES

In 1938 Dr. Jean A. Curran edited a report of the New York Committee on the Study of Hospital Internships and Residencies, of which he was executive secretary (3). This most interesting report presents a comprehensive picture of graduate medical education in New York City in the years 1934-1937. It served not only as a guide for the present study, but as a constant reminder that the problems before us and the efforts to solve them, the criticisms and shortcomings, and the opinions and recommendations of 1960, are not greatly different from those of a quarter century ago.

The position of those who feel that the internship has perhaps outlived its usefulness was clearly stated by Dr. Roscoe Pullen in a monograph published in 1952 (7). Those who are not familiar with this publication may find it particularly interesting as a statement of a conflicting point of view.

A roundtable discussion of the educational opportunities of the internship held during the annual meeting of the Association of American Medical Colleges in 1949 was summarized by Dr. John Youmans (9). Again, the same points were at issue, and the discussion was evidently similar to that which took place during the interviews of this study. In their review of medical education in

this country in the early 1950's Doctors John Deitrick and Robert Berson considered briefly the content of the internship and what its position should be in relation to student and resident education (4).

Participants in the A.M.A. Annual Congress on Medical Education and licensure have touched on the internship from time to time over the years. The papers of a number of these meetings have been reviewed, and each has been helpful in providing some measure of understanding of the many aspects of graduate medical education. While not cited individually, we again acknowledge their contribution.

Three official publications of the A.M.A. have been helpful in giving us background information and guidance. These are the "Report of the Advisory Committee on Internships," 1953 (8), and "The Essentials of an Approved Internship," 1957 (2), and "A History of the Council on Medical Education," 1959 (1).

Many of the departmental chairmen who participated in this study have themselves written on this subject or related topics dealing with broader aspects of medical education. They very kindly made their writings available to us, at our request. These papers served the useful purpose of giving us a better understanding of the programs under study. Failure to identify these authors and their work does not reflect a lack of respect and appreciation on our part, but is in keeping with our policy of preserving the anonymity of all participants in the study.

## CHAPTER II—PLAN OF THE STUDY

### 1. OBJECTIVES

Stated broadly, the objective of this study was to assess the educational quality of both rotating and straight internships in hospitals associated with

medical schools as that quality is related to the undergraduate program upon the one hand and to the residency upon the other. In trying to meet this objective, the study director and the committee placed themselves in the role of skilled observers whose primary function was to collect as much information as possible about the internship as it existed in major teaching hospitals associated with medical schools in the year 1959-1960. The study particularly sought to determine how interns spent their time and what their duties and responsibilities were. Especially important were the educational atmosphere in which they worked and the specific means whereby each program sought to provide satisfactory learning opportunities for interns.

In the course of the study, it was inevitable and desirable to obtain the opinions of many individuals intimately concerned with this phase of graduate medical education. These were recorded and, where appropriate, have been incorporated into the body of this report. An attempt has been made to present the findings of the study in such a manner that each person may make his own evaluation of the "educational quality" of today's university-hospital internship. It is hoped that the information obtained will provide a sound basis upon which those responsible for the planning of graduate medical programs may build.

### 2. SELECTION OF HOSPITALS

One of the earliest problems faced by the study group was the selection of participating hospitals. Those who planned the study never intended to include the internships in all the hospitals associated with medical schools. However, the study had to be sufficiently extensive to provide a reliable sample of several types of institutions. After much deliberation, 27 hospitals representing the clinical services of 28 medical schools

were invited to participate in the study, and all accepted. These hospitals were selected on the following bases:

*Geographic area.*—The hospitals were located in 24 of the 35 states which had 4-year schools of medicine. Every geographic area of the country was represented, and, insofar as possible, this representation was proportional to the concentration of medical schools in each area.

*Type of Internship.*—It was felt necessary to include all types of internships, and a strong effort was made to include these in their proper proportion. The degree of success with which this was achieved is shown in Table 1, which compares the distribution, by type, of the internships offered by major teaching hospitals<sup>2</sup> associated with medical schools, and that of the respondents in this study. The 27 participating hospitals (plus nine hospitals with which the committee members were associated) appointed 1,496 interns in 1959-1960, and, of these, 1,200 (80 per cent) completed a questionnaire as part of the study. Of the 1,200 respondents to the questionnaire, 67 per cent were taking rotating or mixed internships, 18 per cent straight medical, 10 per cent straight surgical, and 5 per cent straight pediatric internships. No internships in the study were classified as straight obstetrics and gynecology. In all instances the classification of internships in this study conforms to that of the National Intern Matching Plan.

*Size of hospital.*—The distribution of hospitals by bed capacity was as follows: six had fewer than 500 beds, eleven had between 500 and 800 beds, seven had 800 to 1,000 beds.

*Source of financial support.*—The ma-

<sup>2</sup> These were the hospitals designated by "X" in the issue of October 10, 1959, of the *Journal of the American Medical Association*.

TABLE 1  
DISTRIBUTION OF UNIVERSITY HOSPITAL  
INTERNSHIPS BY TYPE

	NATIONWIDE FIGURE		THIS STUDY	
	No.	Per Cent	No.	Per Cent
Rotating and mixed	3003	69	804	67
Straight medical	756	17	216	18
Straight surgical	407	9	120	10
Straight pediatric	225	5	60	5

ior source of financial support of the medical school with which the hospital was associated was considered. Table 2 indicates the various combinations of hospitals and medical schools.

*Combinations of programs.*—Eleven of the 27 hospitals studied offered both rotating and straight internships at the time of this study. A disproportionately large group of such hospitals was selected to observe the effect, if any, of one program upon the other.

### 3. ANALYSIS BY VISIT AND QUESTIONNAIRE

*The plan of the visit.*—During the preliminary phase of the study, the staff experimented with various procedures during the hospital visits. It gradually became apparent that certain activities yielded a greater volume of information

TABLE 2  
COMBINATIONS OF HOSPITALS AND  
MEDICAL SCHOOLS

	Hospi- tals visited	Hospitals studied by question- naire only
Private school using private hospital	10	3
Private school using tax-supported hospital	4	3
Tax-supported school using tax-supported hospital	13*	2*
Tax-supported school using private hospital	0	1

\* Some of the hospitals in this category were state-owned facilities with accommodations for both private and public patients.

for the time invested than did others, and, as a result, a standard schedule for each visit was evolved. This was arranged with the clinical staff of each hospital, through the dean's office of the associated medical school, several weeks prior to the visits themselves. Although local circumstances resulted in minor modification of the schedule in a few hospitals, each visit included all of the following items:

1. Interviews with: the chiefs of each of the major clinical departments participating in intern program of the hospital; one or more groups of fourth-year medical students; some of the interns currently assigned to each of the major clinical services; the hospital administrator or medical director; the dean of the medical school.

2. Attendance at regularly scheduled ward rounds or at a regularly scheduled clinical conference of as many of the services as possible. Attendance at both was possible in some departments, while on other services only one could be attended.

3. A tour of the physical plant of the hospital, including representative patient floors on which interns worked, the library, out-patient department, emergency room, house staff quarters, and the house staff cafeteria or dining room.

4. In addition to the above, each visit provided opportunity for formal or informal discussion with other senior staff members in various capacities. In some instances, this included the entire intern committee of the hospital. In many institutions it was possible to interview members of the clinical faculty of all ranks, and as many of these were included as time would permit.

A few of the visits lasted for 2 days only, but most of them extended 2½-3 days. In the instance of the hospital in which the clinical services of two medical schools were visited, the duration of the visit was 4 days, equally divided between the services of the two schools. All of the hospitals in the study group were visited by the study director. In

addition, all but two members of the committee accompanied him on one or more visits.

During the course of the visits, extensive notes were made. These were later dictated in considerable detail and fully transcribed. They included personal observations of the staff as well as the replies to a fairly standard set of questions asked of the individuals or groups interviewed. Whenever possible, replies which were given in particularly colorful or descriptive terminology were recorded verbatim. Later sections of this report include some of these quotations to convey the emphasis that was made at the time of interview.

For those who may have misgivings as to the accuracy of information obtained in this matter, a comment concerning the high degree of cooperation received throughout the course of the entire study is appropriate. The invitation to participate was extended to the staff of each hospital through the dean of the associated medical school. It was emphasized that participation was entirely voluntary, but in no instance was the invitation rejected, nor was participation by the hospital qualified in any way. Because of the nature of the study, assurances were given that every effort would be made to preserve the anonymity of the specific sources of information when the findings were reported.

Those conducting the study were extremely gratified that all participants shared the spirit of the study and, indeed, did not hesitate to point out any deficiencies of their own programs of which they were aware. On the contrary, in several instances the study group was permitted to see confidential memoranda and reports of self-studies. Such confidential information has not been included in this report, but having knowledge of it made possible a more informed analysis of the various programs.

*Questionnaire to interns.*—Although a great deal of opinion and information could be obtained in the manner described above, the committee decided that additional information should be sought directly from all interns in the hospitals under study. The committee was fully cognizant of the limitations inherent in an intern's analysis of his own experience, particularly before he had completed it. Some may have missed the full significance of the intern year or failed to exploit fully its opportunities. For some, the emotional reaction to stressful situations during this year of transition from student to physician may have made it difficult for them to be objective.

In spite of these limitations, the intern remained the one person who could describe in detail what he had done. True, the description offered by some may have distorted the picture a bit. On the other hand, it was felt that a conscientious attempt to recapitulate their experiences by a large number of men should make it possible to construct a reasonably accurate picture of this first year after medical school.

Considerable time and effort were spent in developing a questionnaire. Many groups participated in its preparation, including students, interns, and residents, as well as faculty members of several medical schools.<sup>3</sup> Several revisions of the questionnaire were tested on groups of interns and residents prior to the construction of the final version. In spite of these efforts, the questionnaire as used had obvious flaws. Nevertheless, it was mailed simultaneously to the interns of participating hospitals in April, 1960, being sent directly to each individual and returned directly to the

Study Office, thus providing for confidential replies.

The questionnaire sought information concerning: (a) factors which influenced the student's selection of an internship; (b) details concerning the duties assigned to interns by the various specialties; (c) the intern's appraisal of the amount of authority and responsibility he was given for patient management; (d) his relationship to students and residents; (e) the nature and frequency of the various types of teaching activities which were made available to him; (f) his opinion of the effectiveness of these teaching activities; (g) some details concerning his assignment in the out-patient department and in the emergency room; (h) the place of the intern on the psychiatric service, if the internship included such an opportunity; (i) the relationship of the administrative staff of a hospital to the graduate educational program of the institution; (j) a retrospective evaluation of some aspects of the fourth year of medical school; (k) the career plans of these interns and their estimate of the relationship of their intern experience to their future course.

Wherever possible, questions were asked in a way that provided for some degree of verification of replies. In some instances, however, it was necessary to ask for opinion. When this was done, the opinions requested related to some area of information which was obtained by the observers at the time of the visits to the hospitals. Where the opinions of the interns differed from the impressions formed by the study staff, attention has been directed to these discrepancies.

#### CHAPTER III—HOW INTERNS AND HOSPITALS CHOOSE EACH OTHER

##### 1. STUDENT GOALS DURING INTERNSHIP

Many fourth-year students have a very clear idea of what they believe an internship should offer in terms of learning

<sup>3</sup> The staff of the Bureau of Applied Social Research, Columbia University, devoted many hours to helpful consultation in preparation of the questionnaire.



opportunities. Though not listed in the order of importance, for each student ranked them in a somewhat different way, the following features were most frequently mentioned: (a) Virtually all were looking for an opportunity to see a larger number of patients than had been assigned to them as medical students. (b) This, they hoped, would enable them to become familiar with a wide variety of disease problems. (c) They wished to have a large amount of responsibility for patients, but at the same time, the overwhelming majority wanted to have adequate supervision available. What constituted adequate supervision was defined differently by individual students as well as by faculty members. (This matter is dealt with again in a later section of the report.) (d) Most wanted sufficient contact with the senior staff to enable them to compare the methods of several competent physicians in the successful management of disease processes. (e) All these things, they believed, would enable them to build self-confidence. (f) These aspects of the internship would, they believed, provide the opportunities necessary to prepare them for their roles as residents and practicing physicians.

## 2. FACULTY COUNSELING; SOURCES OF INFORMATION

Students and interns at each institution were asked to describe the activities of their faculties in advising and assisting them in selecting internships. As might be expected, these activities varied from a highly organized and moderately intensive attempt on the part of the faculty to assist the student, to one in which there were very few formal measures of this nature. In general, it is fair to say that medical students are dissatisfied with faculty efforts in this respect. They feel that medical faculties generally, and as individuals, have not

shown sufficient interest in assisting them, nor have they devised means of doing so effectively. Students recognize that, since the final decision must rest with them, it may be difficult for their teachers to be genuinely helpful. Nevertheless, they feel that it is possible to do more than is being done.

The major difficulties are fourfold: 1. Faculty members often know too little about other internship programs, particularly those in nonuniversity hospitals and in institutions some distance away. As a result of this lack of familiarity with other programs, the faculty advisor often resorts to the time-honored system of recommending the program of a particular hospital because he knows "a good man on the staff." Students tend to resent this as the imposition of the opinion of a second party which does not duly consider the student's own personality, his professional needs, nor the ability of the hospital program to meet them. 2. The students of a number of schools have a distinct impression that those faculty members who are given the responsibility for advising them in the selection of internships often do not know enough about them as individuals to be helpful. This may be further complicated by the attitude, of some medical educators, that it makes little difference where a man has his internship as long as it is in a major teaching hospital. Since all medical school graduates cannot be accommodated in university hospitals, such an attitude on the part of the faculty may engender a feeling of frustration and hostility in certain students. 3. Further difficulty results from the lack of an adequate opportunity to visit the hospitals under consideration before making a selection. Most students feel that such visits are important, and most faculties encourage their students to make them, if possible. The limitations are usually time and money. Often

a student is interested in a hospital some distance from his home or school and may therefore seek, receive, and accept an appointment there without having visited it. Since this may continue to be necessary for some graduates, it further emphasizes the importance of a faculty's knowing its students well and having accurate information about the programs into which it sends them. 4. This highlights the fact that all the presently available sources of information about internship programs offered by the many approved hospitals are inadequate to permit students to make an accurate estimate of their educational quality.

Near the end of the questionnaire interns were asked the following question: "As you see it now, how good do you feel the advice and counsel given you by your medical school faculty was, regarding internships?" The replies were: "very good"—32 per cent, "good"—37 per cent, "fair"—19 per cent, "poor"—9 per cent, "no response"—3 per cent. Although these figures give an accurate picture of the situation from the point of view of the university hospital intern, the impression gained from interviews with senior students was that an even more unfavorable evaluation would have been made if the survey had encompassed all graduates, including those in non-university hospitals.

### 3. FACTORS AFFECTING A STUDENT'S SELECTION

The process of selecting an internship is difficult for many medical students, and some of them look upon it as the most important decision they will be required to make during their years of formal education. The range of attitudes toward the internship and the approach taken to its selection is as varied as the personalities involved. A few of the medically more sophisticated have considered this choice some time before be-

ginning the fourth year in medical school. These men are likely to proceed in a fairly rational manner to weigh the pros and cons of various appointments and, after visiting the hospitals under consideration, to rate each one on a sound basis. Others have procrastinated in giving thought to this decision until they were forced to do so. Some of these students may be uncertain about their future course in medicine and have an idea that their entire future beyond medical school hinges on either the type of internship selected, the hospital in which it is served, or a combination of these two. Many with this attitude approach the date of final selection with considerable emotional strain and much indecision.

Although a number of students interviewed in the fall of 1959 said that they were undecided as to their field of major interest in medicine, the impression was gained that, in spite of this, many of them were going about the process of selecting an internship in a fairly logical manner. The approach taken by a large number is illustrated by the following quotation from one student: "First I considered what I wanted to do in the future and what was most lacking in my medical education to date. I then looked for an internship to meet my needs and fill in the gaps in my education." Some decided first whether they preferred a rotating or a straight internship, then visited hospitals offering the type internship desired and compared the relative advantages of each. Another group of students had not only decided which branch of medicine they planned to practice after the completion of their formal medical education but had gone so far as to select the specific hospital residency of their choice. These then sought the internship which they felt was most likely to qualify them for the residency appointment they hoped to obtain. A

TABLE 3  
FACTORS INFLUENCING SELECTION OF INTERNSHIP

	Per cent checking "major importance"
1. Medical reputation of the hospital	92
2. Recommendations of others who interned there	66
3. Section of the country in which hospital is located	59
4. Number of ward patients admitted	58
5. Attractiveness of hospital's residency program	55
6. Opportunity to work closely with senior staff physicians	51
7. Morale of members of the house staff	51
8. Recommendations of faculty advisor or internship committee	47
9. Size of city in which hospital is located	39
10. Success of hospital in obtaining interns via Matching Plan	28
11. Amount of routine lab. work done by interns	20
12. Likelihood of being accepted	20
13. Stipend	12
14. Frequency of night duty	10
15. Possibility of joining staff on entering practice	10
16. (Of the married interns, 25 per cent said that their wives' preference for the community in which the hospital was located was of major importance to them.)	10

somewhat undesirable variation of the latter approach is illustrated by the following incident. During an interview with a group of more than a dozen interns in one hospital, it became apparent that these men found it difficult to answer some of the questions being put to them. Finally, one said, "Most of us would not have chosen this internship except as the means to a good residency here. It's the price you pay." The others were then asked whether or not they agreed with this statement. Several agreed completely, and all said that they felt this way to some extent, although not as intensively as the man who had spoken.

Most alert students realize that certain modifying factors play a part in determining how successful a specific intern program will be in providing the opportunities listed above. Therefore, when they came to the final selection of a particular internship, or the ranking of various hospitals in order of desirability, most students compromise between their ideals and the practicalities involved. Interns were therefore asked to indicate whether each of fifteen specific items was of "major importance" or of "minor

importance" to them in the selection of their internships. Table 3 lists these factors and indicates the percentage of respondents who considered each factor to be of major importance.

The above figures are the gross totals for all interns responding to the questionnaire. Since the number who failed to answer for any specific item was a constant 3 per cent the figures represent the answers from approximately 1.165 interns.

When the replies to this question were analyzed by type of internship, some interesting differences appeared. Table 4 lists those factors which showed the largest difference in rating by the different intern groups.

These figures show that rotating interns were somewhat more concerned with the geographic location of the hospital than were those in straight surgical and straight medical programs. They also attached greater significance than did the other groups to the number of ward patients admitted and the institution's success through the Matching Plan. These figures also suggest that the man who wants a straight medical internship is more likely to be influenced by the



TABLE 4  
FACTORS INFLUENCING SELECTION OF INTERNSHIP  
(Comparison of Straight and Rotating Interns)

	PER CENT CHECKING "MAJOR IMPORTANCE"		
	Rotating	Straight medical	Straight surgical
Section of country	65	51	48
Hospital success in Matching Plan	33	25	18
Recommendations of former interns	67	72	52
Recommendations of faculty advisors	41	63	55
Number of ward patients admitted	65	51	40
Opportunity to work with senior staff	47	62	47
Attractiveness of residency program	51	56	81

recommendations of his teachers than the men in the other groups. He shows greater concern than do the others in the opportunity he will have to work closely with senior staff and is likely to value more highly the recommendations of those who have already been through the internship.

The only factor to which straight surgical interns as a group gave a significantly higher rating than did the other groups was the attractiveness of the hospital's residency program. This was of major importance to 81 per cent of them. Perhaps the straight surgical intern is inclined to look on his internship primarily as the door to a residency. Reported elsewhere, however, are figures showing the percentage of first-year residents appointed in 1958-59 and 1959-60, who came from each hospital's intern staff. These reveal that 62 per cent of the first-year residents in medicine came from the hospital's own interns, while 61 per cent of those in surgery did so. Therefore, in spite of the fact that the surgical intern rates the attractiveness of a hospital's residency program more highly than does the straight medical intern, his chances of staying on in the residency program appear to be no greater.

#### 4. SELECTION OF INTERNS BY THE HOSPITAL

As might be expected, there is a wide variation in the manner in which hospi-

tals handle the matter of selecting their interns. In some institutions, the selection is almost entirely in the hands of the clinical faculties of those departments which have interns. Appointment by the hospital administration is more or less a formality. In others the reverse is the case, and the hospital's administrative staff screens and selects interns with minimal consultation from the clinical departments.

The very process of selecting interns, therefore, began to set the stage for the experience which a man would have. In more than one institution where interns were appointed almost exclusively by the administrator, the house staff themselves expressed dissatisfaction with this method. They believed that this introduced the possibility of a psychological barrier between the intern and the clinical staff. Departmental chairmen were also aware of this possibility, and, in commenting on the problem, one of them said, "Interns are lent to us for two months at a time. We have so little control over what they do." Because of this, he added, the residents on his service had a much more difficult job of orienting each new group of interns and were reluctant to demand the excellence of performance from them which they would have required if the clinical staff had selected the hospital's interns.

Two other examples may be cited to illustrate still different ways of handling intern appointments. One large hospital

having approximately four applicants for each intern position rated them almost exclusively on the basis of their medical school records and the letters of recommendation from their deans. Although interviews with prospective applicants were welcomed and freely given, they apparently had little bearing on whether or not a man was selected. It should be added, however, that the staff of this hospital was considering a possible revision of its procedure.

In contrast to this was a hospital in the thousand-bed category and offering only straight internships. There, the chairman of the intern-resident committee of one clinical department personally interviewed all applicants for the internship, had a member of the house staff take all applicants through the hospital, and arranged for them to attend ward rounds with an attending physician. Following this, if the applicants so wished, opportunity was provided for them to talk with other members of the departmental staff. This elaborate procedure was time-consuming, but considerable emphasis was placed on these extended interviews because the staff of this department believes (assuming equal scholastic and professional qualifications of several candidates) that it is possible to develop a greater *esprit de corps* within the department by selecting interns whose personalities, interests, and objectives are most compatible with those of the senior staff with whom they will be working.

Citation of the foregoing examples does not imply that an impersonal method of selection precludes the possibility of an intern having a happy and profitable year. It is believed, however, that the process of selecting interns may be used as one indicator of the attitude of a hospital staff toward its interns.

In general, the selection of rotating interns was done in a more arbitrary

manner, with representatives of the hospital's administrative staff playing a more active part in the process, and with less consideration given to the intern as an applicant to an educational program. In contrast, the selection of straight interns was strictly at the departmental level, greater attention was paid to the individual intern's plans, and administrative appointment was largely a formality. From this point on, the rotating intern was looked upon as "belonging to the hospital," whereas the straight intern "belonged to the department."

#### CHAPTER IV—THE SETTING AND ORGANIZATION OF INTERNSHIP PROGRAMS

##### 1. THE HOSPITAL ENVIRONMENT

*Orientation of interns.*—In some hospitals the orientation process was found to be a highly organized procedure aimed at making the new intern feel welcome and a part of the hospital family. Others, for all practical purposes, handed him an assignment sheet and put him to work. There did not appear to be any significant correlation between the extensiveness of the orientation program and the degree of satisfaction a man derived from his internship. In fact, one of the most elaborate orientation programs was encountered in a hospital whose rotating interns were among the most vocal in criticizing their program. It was the impression of the study observer that the hospital had concentrated on its orientation program in an attempt to offset defects in the internship of which the staff was well aware but not yet prepared to correct.

An item related to intern orientation is the house staff manual issued by some hospitals. Twenty-one of the 27 hospitals gave their interns and residents a manual of some type. These varied from rather large volumes of mimeographed material to small, printed, pocket-sized handbooks. Some of these manuals dealt

only with administrative policies of the hospital, both general and departmental. Others also included sections of variable length pertaining to procedures, tests, and even the therapy of specific disorders. These latter manuals somewhat resembled commercially published physician's handbooks. The six hospitals which did not issue a house staff guide or manual gave their men instead several items of printed or mimeographed material prepared by the clinical departments.

*Departmental responsibility for interns.*—It is often stated that the hospital is the laboratory of the intern and resident. In making this analogy, it should be remembered that the director of every well ordered laboratory is concerned with the quality of the work it performs and is therefore likely to maintain close supervision of its day-to-day activities. It is hardly necessary to point out that someone should be similarly responsible for and aware of the activities of the intern.

Analysis of the assignment of this responsibility for intern supervision in the 88 departments (out of 105) for which information was available showed that in only eighteen departments did the chairman retain this responsibility himself. It was specifically assigned to another member of the senior staff in 36 instances and assigned to a committee of the senior staff in eight departments. On 26 of the 88 services, however, no specific members of the staff had over-all responsibility for intern supervision. For those who are seeking formulas for success, it would be gratifying if a direct correlation could be reported between the assignment of responsibility for supervision and the apparent success of the intern program within the department. No such precise correlation could be made. One reason for this is that, having made such an assignment, nothing

further was done in some departments, and the person or persons to whom the responsibility was assigned merely waited for interns who had complaints about the service to come to them, otherwise demonstrating no particular interest in the interns.

On the other hand, in some of the 26 departments in which no assignment of intern responsibility was made, the attitude prevailed that every member of the senior staff was expected to show interest in the work of every intern with whom he worked. Since this policy appeared effective, it could only be concluded that the attitude of the senior staff toward the house staff is of far greater importance than the mechanism of departmental organization. In general, however, it did appear that, when no members of the senior staff were designated to function in this capacity, the interns were more likely to be dissatisfied with their role on that service. At least the assignment of such responsibility to specific staff members eliminated the possibility that the interns might have a serious grievance concerning the service without knowing to whom they should turn for assistance.

As might be expected, this was a matter of much greater concern in hospitals having rotating internships. Therefore, it appeared advisable for these hospitals to designate one or more members of each clinical department staff to maintain close liaison with interns and residents. The impression was gained that the departmental chairman was not always well suited for this role. Younger members of the staff, particularly those recently out of residency, seemed most effective in this role; however, it was clearly important that the chairman maintain contact with interns and demonstrate continuing interest in their welfare.

Whatever the manner in which this is

handled, it was apparent to the observers that the importance of giving attention to the atmosphere into which the new intern is received should not be underestimated. It is not necessary to pamper interns, but it is a mistake to believe that all men will derive a maximum of education from each department regardless of the attention it gives to their welfare.

## 2. PLANNING INTERN ASSIGNMENTS

*Rotating internships.* — Assignments for rotating interns were planned with little consistency. In some instances this was done by a member of the hospital administrative staff who assigned interns arbitrarily to the various services that "must be covered" during each month of the year. This resulted in a standardized plan of rotation in which each intern was exposed to each of the services for the same length of time but at different times of the year. A variation in this system permitted each intern to select, insofar as possible, the service on which he would begin his rotation. Those interns expressing no preference were arbitrarily assigned to the remaining services.

Two additional systems merit comment. One of these is the program of a large hospital offering ten different rotations. Approximately 10 weeks prior to the beginning of the internship, information is mailed to each incoming intern, outlining in detail each of the ten rotations and describing each of the major services and its subspecialty assignments. The intern then ranks the rotations in order of preference and informs the hospital of his choices. Since only a limited number can be accommodated in each of the ten plans, some men may be assigned to rotations which are their second or third choices. While this system is admittedly not perfect, it does recognize individual preference and rep-

resents an attempt to introduce more flexibility into the rotating internship. Such a plan satisfies the basic requirements of the A.M.A. Council on Medical Education and, at the same time, meets the service needs of the hospital.

The second plan is one offering 3-month assignments in general medicine, general surgery, pediatrics, and obstetrics. Also available are 1-month assignments in sixteen subspecialty areas of medicine and surgery. Interns matched with this hospital are provided sufficient information about the services to enable them to plan a year's rotation. In actual practice, however, only the first 6 months of their schedule has been prepared by the intern committee prior to their arrival in July. A few months later the committee members meet with the interns individually to discuss with them their major interest in medicine and their plans regarding further graduate education. At this time the assignments for the final 6 months are made. The rotations resulting from this system are mixed internships containing various combinations of 3-month and 1-month assignments. The staff of this institution recognizes that an intern may change his mind after several months of an internship and may wish to revise his rotation, and for this reason delays scheduling the final 6 months of rotation. By November they know personally the capabilities and latent potentials of their interns and are better able to help each man plan a more profitable second 6 months. The major emphasis of this program is to attempt to plan an intern year best calculated to meet the educational needs of the individual.

It is immediately apparent that, under such a flexible system as this, some intern assignments may be available but remain unfilled during part of the year. Several objectives to such a program have been raised. One was that if a

service has no intern for several consecutive months, it will obviously learn to get along without one. When an intern is then assigned to the service, the staff may find it difficult to readjust the *modus operandi* to provide a place for him. The chairman of one department in another school disapproved of such a plan saying, "There is either a place for the intern on the service or there is not. If there is one, then it must be filled or it will atrophy." Another objection was to the uneven work load such a program places on the resident staff. As a consequence, those residents on service when there is no intern must assume responsibility for work normally done by an intern. They will also have less opportunity to participate in teaching interns. A third point is that when there is an intern on the service the attending staff must be sure he is included in the discussions on rounds and in the management of patients. This may be more difficult if the attending doctors have become accustomed to dealing only with residents.

Lest the wrong impression be created, it should be emphasized that the selection of a rotation in the hospital described above was not left entirely to the whims of the intern. If the advisory committee felt that an intern was planning a program which did not best meet his needs or which was not likely to provide a maximal learning experience, they would, if necessary, insist on modifying his program in a manner which the staff believed would make his internship more valuable.

Although no conclusions could be drawn from such a small sample, it was interesting to learn what rotations were selected by one year's group of interns under the plan just outlined. Whereas 90 per cent of the men had selected at least 3 month's service on general medicine and approximately three-fourths had

a 3-month assignment on pediatrics, less than 50 per cent had selected a similar assignment on general surgery. The interns omitting general surgery were therefore asked why they had done so. Some simply had a greater interest in medicine or pediatrics and preferred to spend additional time in the subspecialties of these departments. Others, however, were planning careers in surgery and expressed, in various terms, the feeling that they needed as much experience as possible in nonsurgical fields before confining themselves to their selected specialty. This attitude, which is so familiar to anyone who has counseled medical students about internships, often appeared to the observers to be the result of preconceived ideas concerning internships rather than the result of logical planning. However, students and interns were not the only ones who took this point of view, since several departmental chairmen, in musing over this philosophical point, suggested that, if a student knows definitely what specialty he wishes to practice, perhaps he ought to have experience as an intern in all fields except his chosen one.

As previously mentioned, some hospitals with rotating internships asked their interns to indicate the service on which they preferred to start their schedules. The intent of this was to give each man the opportunity to become familiar with, and to be seen by, the staff of the department in which he was thinking of seeking a residency appointment. This policy was appreciated by the interns, and, in general, the staffs of these hospitals seemed to feel that it helped them in selecting residents for the following year.

*Straight internships.*—Problems of assignment in straight internships were somewhat different from those in rotating internships. Policies differed, but generally the various assignments within



a department were determined by a group of the senior staff with the departmental chairman usually retaining veto power in case his colleagues pressed for an assignment of which he disapproved. Most programs seemed to be organized around a 6-month experience on the general words of the specialty. The remaining half-year might be spent in assignments to various subspecialties, the out-patient department, emergency room, or the private patient service. There were minor differences among the specialties, but these were generally dictated by the age of the patients with which the specialty dealt or by the types of disease which it saw most frequently.

The primary difference in planning a program within a department for rotating and straight interns was the greater depth of experience within a specialty which could be provided the latter. For example, whereas the rotating intern assigned to pediatrics was likely to get only general pediatric ward experience, the straight pediatric intern would, in addition, spend some time in the newborn nursery, the unit for premature babies, or on an assignment to the isolation ward if one was available. On the medical service the straight intern was more likely to spend time in specialty units for cardiovascular-renal disease or metabolic disorders than was the rotating intern. The rotating intern on surgery was less likely to spend any significant amount of time in ophthalmology, otorhinolaryngology, or urology than his counterpart spending a full year on the surgical service, although the time spent in orthopedics was similar for both groups.

The criticisms so frequently heard concerning the nature of assignments in some rotating internships were seldom encountered in the straight internship. Since the specialties had the latter interns for an entire year, there was no

reason for failing to provide assignments of sufficient length to enable the intern to derive the greatest value from each one. The only straight internships which suffered in this regard were those in straight surgery, which offered a fairly fragmented series of assignments in trying to "cover" every subspecialty of the field. In general, the assignments in straight internships were designed to provide intensive teaching in the fundamentals of the specialty plus as much variety of experience as time would permit.

The phenomenon which might be called "rotating straight internships" warrants brief mention. Reference is made here to those rotating internships which assign men successively to a series of highly subspecialized services. Under such circumstances an intern's 3 months on medicine might conceivably consist of 1 month each on the gastrointestinal service, the cardiology service, and the neurology service. Such services are designed primarily for residency programs and the convenience of the attending staff. While they provide excellent teaching opportunities for the purposes intended, they do not seem to be an adequate substitute, at the intern level, for the general services discussed below.

### 3. CONTENT OF SPECIFIC ASSIGNMENTS

*General ward<sup>4</sup> services.*—These were by all odds the most popular with interns and were considered to be the most important assignments in virtually every internship. The only exceptions to this were those ward services whose nature was altered by some particular characteristic of the hospital or by geographic location. For example, some communities utilized their city-county hospitals for the care of the chronically ill in a man-

<sup>4</sup>"Ward patients" were defined in the questionnaire as "staff patients," "service patients."



ner which tended to reduce the number of beds available for the acutely ill, thus rendering ward services somewhat less valuable to the intern. The reverse of this situation existed in several hospitals where a few chiefs described their's as "catastrophe services." By this they meant that the number of persons seeking medical care at these hospitals so greatly exceeded the available ward beds that the house staff could admit only the most critically ill. Every patient who might conceivably be treated on an ambulatory basis was so handled.

The problem of maintaining what may be considered an educationally optimal variety of disease entities and a balance between the number of patients with acute and chronic disorders on each unit at all times is a familiar one. It is a constant headache to the administrative staff who must maintain the economy of the hospital and who quite naturally desire to place a sick patient seeking admission in an empty bed even though the service concerned might already have under its care a half-dozen patients with the same disorder. Because this problem is not peculiar to any single hospital and because it has serious consequences if allowed to get out of hand, it is mentioned to call attention to the necessity for its solution through cooperation by hospital administration and the teaching staff of all institutions. Ill-tempered memoranda between clinical department chairmen and hospital administrators, or snide remarks in the course of medical rounds are unlikely to solve the problem or to create good will.

It was the consensus of both the senior staff and the house staff interviewed that an assignment of fewer than 8 weeks to a general ward reduces its educational value, and that one of fewer than 6 weeks to any ward is probably a mistake. One chairman commented that the newly assigned rotating intern requires 4 weeks

to become sufficiently familiar with the department's resident staff, senior staff, patients, and the nature of the service, to reach the point where he can benefit maximally from the available learning opportunities. Although others were not so precise in their timing, it was the majority opinion that this is an important consideration in planning any internship.

What particular advantages might accrue to the intern in being assigned to a general medical or surgical ward, as opposed to other assignments within a specialty? It would appear that the most important feature of such a service is the broad scope of medical problems the intern encounters there. He feels that here, more than on any other assignment, he is truly the patient's physician, dealing with every aspect of an illness, whether anatomical, emotional, or sociological. It is here that he is most likely to follow the patient with an acute illness from onset to recovery or death. It is here that he has the greatest opportunity to tie together the various fragments of his medical knowledge. It is usually while caring for public patients that he is given the greatest authority for, and responsibility to, the patients under his care. In the most desirable setting, the intern assigned to the general ward will be given ample time with individual patients so that he may work out difficult diagnoses and learn something of practical therapeutics. Ideally, he will also get to know the families of his patients. Probably few other experiences in medicine equal this one in providing the opportunity for the intern (or resident) to develop skill in both the art and science of medicine.

*Private general services.*—The variety of pathologic processes encountered on a private medical or surgical service is fully as great as that seen in the public wards. Nevertheless, most such private

TABLE 5  
INTERN EXPERIENCE WITH PRIVATE PATIENTS

	PER CENT ANSWERING "TRUE" FOR:			
	Medicine	Obstetrics	Pediatrics	Surgery
Great number of admissions reduced educational value of assignment	44	21	5	41
Little time for follow-up of interesting patients	39	34	7	44
Private doctors, in general, ignored intern or assigned menial tasks	21	50	13	48
Private doctors gave intern opportunity to make decisions regarding management	70	16	67	33
Experience valuable in spite of limitation of responsibility for patients	84	65	89	77

services are distinctly less popular with interns than are the public services. The reason for this unpopularity would then seem to be pertinent to this study.

The first criticism usually mentioned in connection with private service assignments is the intern's reduced status in the medical hierarchy. Unfortunately, some physicians who are excellent teachers on the public wards have not learned to delegate much responsibility for their private patients to the same house staff on whom they relied so completely in the management of public patients. This is a facility that some doctors do not easily acquire. Furthermore, it is doubtful whether the conscientious private physician can ever delegate as much responsibility for private patients as the house staff would like.

Ignoring for the moment the pertinent question of the medico-legal aspects of this problem, it is usually on the private services that the individual staff members indulge their whims, prejudices, and idiosyncrasies in patient management. Too often on the private service the intern will be handed a list of procedures and tests to be ordered in a specific sequence on the patient who represents a diagnostic problem. With some patients these may even have been scheduled prior

to admission to the hospital. This is usually explained as an attempt to save time and money for the patient. Nothing is more calculated to stifle completely whatever enthusiasm and intellectual curiosity the intern may previously have had. In this one brief gesture, the intern can be reduced from the role of a participating physician to that of a scribe. Although the attending physician can easily rationalize such conduct as being in the best interest of the patient, there is serious question whether physicians who do this should admit private patients to university hospitals. Universally held, such an attitude toward teaching responsibility would make the private service in a university hospital no more useful for graduate education than that of any other private hospital.

Forty-five per cent of the interns had had an assignment to one or more private services. These were fairly evenly divided between services with only private patients and those with both private and ward patients. The replies of these interns to certain statements about their experience is shown in Table 5. The number of new patients admitted to private medical and surgical services was found by 40 per cent of interns to be

great enough to reduce the educational value of the assignment. A similar percentage had too little time for adequate follow-up on the more interesting patients. Interns felt that approximately half the private physicians on obstetrics and surgery largely ignored them, while substantially fewer felt this was true of the staff on medicine and pediatrics. In spite of these criticisms, and the limitations placed on their responsibility for private patients, the percentage of interns who found their work with these patients to be valuable varied from a low of 65 per cent in obstetrics to a high of 89 per cent in pediatrics. By all criteria, pediatrics seemed to provide its interns with the most satisfactory experience with private patients.

Interns often observed that teaching rounds on private services are far less satisfactory than those on the public wards. The private physician is often hurried and unwilling or unable to take the time to discuss his private patients with the same interest and candor that he exhibits with public patients. Rounds tend to become perfunctory, routine, and unstimulating.

Most teachers of medicine admit that, unless the staff makes an unusual attempt to overcome the inherent difficulties on a private service, the educational experience provided there does not measure up to that provided on a public ward. With increasing coverage of health insurance, efforts must be renewed to develop appropriate ways of integrating private patients into teaching programs. Regardless of what the future may bring in medical economics, the fact remains that our private services have a potential for medical teaching that is often not used effectively.

Various plans for developing private patient teaching services were encountered. Most of those observed were in departments of medicine. The general

plan usually was to designate one floor, or patient area, for the use of staff members who had indicated a special interest in having some of their patients participate in a teaching program. To this floor would be admitted those patients who best illustrated some special medical problem or disease. Prior to admission, the physician would explain to each patient that students and house staff would be participating in his care. Often teaching rounds on these floors would be made by each staff man in turn, and he would be free to see any patient in the unit. Tact and discretion are required of all who participate in the activities of such a unit. In spite of numerous theoretical objections to plans of this type, it has been found that they can be made to work to the benefit of patients, attending staff, and the teaching program.

*Subspecialty assignments.*—The policy of assigning interns to practically every subspecialty of a service was repeatedly criticized by some faculty members and many house officers. It would hardly seem consonant with accepted principles of graduate medical education to assign an intern for no more than two weeks to a subspecialty such as ophthalmology or otolaryngology with the stated objective of "exposing" him to these services. It is difficult indeed to believe that in so brief a time a man can pick up very much that is important. It seems inconceivable that he would have the opportunity to learn the fundamental principles on which the subspecialty is founded, let alone how to put these into practice in the management of specific cases. Although some faculty members insist that this is good pedagogy, the frequent criticisms by interns who have experienced such assignments are evidence to the contrary. It would appear that assignments in the subspecialties of medicine, surgery, and pediatrics in a mixed or

rotating internship should be included only in those programs which are flexible enough to permit a stay sufficiently long to make the experience worthwhile. Any attempt to include all or most such subspecialties in a rigid rotation would appear to be a serious mistake.

*The emergency department.*—When interns were asked to select the assignment they considered "most valuable" (without defining what was meant by this term) many immediately selected the emergency department. Although this was more likely to be true of the rotating than of the straight intern, it was a rare individual who did not consider with pride his role "on the firing line" in the emergency department. It seemed to the observers that this was partially the result of a psychological phenomenon which occurred on this service. Most men began their intern assignment there with minimal previous experience in handling acutely ill patients or in deciding whether patients brought in by ambulance, police car, and taxi required emergency care or not. They had serious doubts concerning their ability to make the decisions required of them, and to care properly for the true emergencies which did arrive. They were gratified and reassured to learn that the basic principles of history-taking and physical examination apply equally in the emergency room and on the wards. Of course, the intern who recognized this fact most quickly was the one who was likely to benefit most from his emergency room experience.

In the well conducted emergency department, interns had an opportunity to learn for themselves that, in most instances, they could determine quickly whether a patient was "unconscious" from diabetic coma, shock, or hysteria. They learned what techniques were effective for rapidly screening large numbers of patients to distinguish those

with organic illness from those who feigned illness to gain other ends. From the resident staff and attending staff they were able to learn the techniques for instituting rapidly, and with a minimum of confusion, those procedures which are sometimes necessary to preserve life and relieve pain and anxiety. Small wonder, then, that many interns expressed the feeling their emergency department assignment was a most satisfying experience.

Nothing in this report is meant to detract from the importance of this service. On the other hand, it would seem that the importance of the emergency department experience is disproportionately great in the eyes of the intern. In spite of this feeling, it was the opinion of a majority of the faculty members and house staff who were interviewed that such an assignment should rarely be excluded from an intern program.

It was interesting to observe the wide variety of experiences which were classified as assignments to the emergency department. One hospital had such a limited service that, for all practical purposes, it was closed at night. It is obvious that any emergency department that can close its doors at night is far different from one in a busy city hospital. Other services, though indeed treating emergencies and seeing many cases of trauma, did not admit patients directly from the street or on a self-referral basis, but instead received a pre-selected group of patients, many of whom were referred from some distance. These patients were likely to be victims of either automobile or farm accidents, or were other surgical emergencies which could not be handled adequately in smaller rural hospitals. These emergency services provided an experience which was almost exclusively surgical in nature.

At the other end of the spectrum were those emergency rooms which had an

intern and resident of each of the major specialties on call at all times. In these, either an intern, a staff physician, or a skilled senior nurse screened the patients to determine which specialty could best care for them and, hence, which members of the house staff should be summoned first. If subsequent examination and study indicated that a patient could be handled more appropriately by another service, consultation and transfer were readily arranged. Still other hospitals had such large emergency services that they were further subdivided. These subdivisions might care only for pediatric patients or trauma patients or non-surgical emergencies in adults.

The relationship of the emergency room to the out-patient clinic should be mentioned. In more than one community, people have developed the habit of bringing their children into the hospital's emergency room after working hours. As a consequence, one hospital found that its emergency room was, in effect, becoming primarily a large pediatric out-patient clinic after 5:00 P.M. To relieve this situation, a pediatric clinic was opened from 5:00 to 10:00 P.M., and all children brought to the hospital during those hours were seen there rather than in the emergency room.

The phenomenon, however, is not confined to the pediatric specialty. Hospitals in some cities have noted an increasing tendency on the part of the ambulatory sick of all ages to come into the emergency room during the evening hours with their minor complaints rather than stay away from work and wait for a long time to be seen in a daytime clinic. Such problems are primarily administrative. However, they also are of concern to the medical staff, since they affect the patient load which an intern may experience during his assignment to either the emergency room or the out-patient department. They must, there-

fore, be considered in deciding the manner, frequency, and duration of an intern's assignment to these areas. As in all other assignments, the opportunity for the intern to learn should be balanced with his obligation to render public service.

*The out-patient department.*—The desirability of including some out-patient experience in an internship is recognized in the *Essentials of an Approved internship* (2) which states: "Hospitals should provide to all interns carefully supervised experience in ambulant care under circumstances comparable to the office practice of medicine. Out-patient assignments should be closely correlated with corresponding services in the hospital . . ." It became evident in the course of this study that seldom is this goal achieved in actual practice.

Certain programs studied offered no opportunity for out-patient experience. In others, the intern was theoretically given the opportunity to work in the out-patient department but carried this assignment simultaneously with another which required most or all of his time, thus preventing him from functioning successfully in the clinic. The failure to provide out-patient experience was not confined to rotating internships, since certain straight programs also did not include assignment to the out-patient clinic. In some instances this was a deliberate omission. A number of faculty members believe that, to function efficiently and learn maximally in an out-patient setting, more training and experience are required than most interns have had. For this reason, they prefer to assign only residents to the out-patient department.

The arguments for and against an out-patient assignment during the internship do not clearly favor either point of view. Rather than to attempt any arbitrary recommendation in this matter, it seems

more appropriate here to describe some of the programs, pointing out the strong and weak points of each.

Some hospitals provide out-patient experience in the following manner. The general medical service, for example, may be divided into teams A and B. These teams will consist of an attending senior staff member, one or more residents, one or more interns, and usually a group of clinical clerks. Team A will hold "teaching" rounds on its in-patient wards on alternate days of the week. On the other 3 days, a smaller group of team A (generally the residents and interns) will make brief "work rounds," and then the entire team, including the attending physician, will go to the out-patient department to conduct the general medical clinic. Some of the patients seen here will have been previously discharged from the hospital by this same medical team and referred to its own clinic. Others will be new patients, some of whom will require admission. When admitted, they will be placed on the wards of team A. At the conclusion of the clinic hours, the house staff and students return to the wards and continue the work-up of the new patients which the team has admitted. The same procedure is carried out by team B on alternate days of the week. Such a system seems to offer the possibility of greater continuity of patient care for students and house staff.

Where this system was in effect, it appeared to be popular with most participants. It is obvious, however, that, for such a system to work, it was necessary for each team to have under its care both male and female patients at the same time. If this were not possible, then it would be necessary to separate the patients by sex and have one team caring only for men, while the other concerned itself with the women's ward and clinic. The essential feature of this

plan was that the staff responsible for a single group of patients functioned in both the in-patient and the out-patient departments at the same time. It should be pointed out also that this system did not prohibit the admission of patients from the emergency room, or other sources, at other times of the day as the occasion arose. Thus, admissions were not entirely limited to clinic days or to the clinic population.

Such a system was not widely used. A far more usual policy was to make the out-patient assignment a separate block of time. This generally consisted of having the intern work in a general clinic in the morning and in one or more specialty clinics in the afternoon. He would deal exclusively with clinic patients during these few weeks.

This method also has advantages and disadvantages. Since the intern works in the clinic for the entire day, he might see a greater volume of ambulatory patients than would be possible under the system first described. He is also given the opportunity to attend a greater variety of clinics, thus broadening his experience. If the instructors who work in the clinics with him are interested in teaching, and take the time to do so, he can undoubtedly learn a great deal about the care and management of ambulatory patients.

The greatest disadvantage of this system appears to be the lack of continuity with in-patient care. In every large out-patient clinic, a number of patients will require admission to the hospital. If the intern is restricted to the out-patient department, this means that, whenever one of his patients is admitted to the in-patient service, he is almost certain to lose contact with him. He inevitably gives up all responsibility for the care of that patient. Thus, he is faced once more with the ubiquitous problem of all phases of medical education—the episodic na-



ture of his experience. This system also has disadvantages for the house staff assigned to the in-patient services, since they are not immediately familiar with the care which the patient has received in the out-patient department and they may expend a good deal of time and effort in reviewing the out-patient chart and contacting those who cared for the patient during the ambulatory phase of his illness. In spite of these limitations, this experience has much to offer the conscientious intern who is fortunate enough to be working with a resident and attending staff who are enthusiastic about the care of nonhospitalized patients.

A third method gave the intern a primary in-patient assignment and a simultaneous but secondary assignment to the out-patient department for the sole purpose of following those patients discharged from the hospital. This assignment usually ran concurrently with his assignment to a general ward of medicine, surgery, or pediatrics. Under such a plan, the intern was expected to go to the out-patient department for part of a day, once or twice a week. Such follow-up clinics were usually considered to be of value by those who had worked in them. These programs had the unfortunate limitation of confining the intern to a single group of patients and acquainting him with only a small part of the spectrum of ambulatory patient care.

A variation of this third plan gave the intern a simultaneous in-patient and out-patient assignment and permitted him to go to the out-patient department only if his other duties did not interfere. Under these circumstances it appeared to the intern that his out-patient duties had such a low priority that no one really expected him in the clinic. Some interns found that, when they did attend clinic out of interest or an inner sense of compulsion, the time spent there was not

highly profitable. The attending staff did not really expect the intern to be present and consequently they had little for him to do, gave him essentially no responsibility, and were almost certain not to offer much worth-while instruction. In the mind of the intern, this tended to create the impression that out-patient care was of little importance. For the sake of interns and the services concerned, it would seem wiser if these programs simply omitted out-patient assignments from the intern schedule.

*Out-patient teaching.*—Insofar as teaching in the out-patient department was concerned, interns wished to have consultants available, but did not feel it necessary to have a resident or attending physician check each patient. This policy, which was followed in most clinics, obviously left a great deal to the discretion of the intern. However, it had much to recommend it, since it provided an excellent opportunity for the intern to be self-reliant. Under these circumstances, the best safeguard which the senior staff had against mistakes was to demonstrate to interns by precept and example the importance of ambulatory patient care.

Those interns who had completed an assignment to an out-patient service were asked, "Who most often supervised your work in the out-patient clinic?" The replies are shown in Table 6. The figures indicate quite clearly that, when the intern's work is supervised in the clinic, it is the resident staff who provide all but a small part of the instruction. The percentage of respondents who indicated that most often no one supervised their work was greatest for the clinics of internal medicine. This was almost always a matter of departmental policy or election, since in none of the clinics visited was assistance or supervision unavailable to the intern.

One of the most important determin-

TABLE 6  
INTERN INSTRUCTION IN OUT-PATIENT CLINIC

	Med. (Per cent)	Obs. (Per cent)	Ped. (Per cent)	Surg. (Per cent)
No one	30	8	8	16
Resident Staff	59	90	74	79
Junior Attending	6	1	8	3
Senior Attending	5	1	9	2

ants of the educational value of the out-patient experience was the number of patients whom the intern was expected to see. From personal observation it was apparent that in some clinics the intern was a necessary "pair of hands" in providing service to the community. In certain of these, the conditions under which he worked made it virtually impossible for him to do much more than give symptomatic treatment.

The work load of interns in the various clinics is summarized in Table 14 (Chapter VI). Taken literally, these figures indicate that the inexperienced physician must see far too many patients in the time allotted. It seems unlikely that an intern could give good patient care or develop good medical habits while seeing so many clinic patients. Numerous factors must, however, be considered in evaluating these figures. Allergy clinics and well-baby clinics can adequately care for far more patients per hour than can general medical clinics. Nevertheless, a significant number of interns felt that their patient load in the out-patient clinics was excessive (Table 7).

The variety of illnesses and the percentage of patients which can be cared for on an ambulatory basis are steadily increasing. Raising the prestige of an out-patient assignment in the eyes of

students and house staff will enable them to approach this service with greater enthusiasm and a keener appreciation of its educational value, as well as its relationship to the practice of medicine in the future.

*Laboratory work.*—*The essentials of an Approved Internship*<sup>2</sup> states that an intern should become thoroughly familiar with the laboratory procedures ordinarily employed in the initial study of a patient and should also have the opportunity to learn the significance and limitations of those procedures which are performed only in the central laboratories of the hospital. There seemed to be little or no disagreement with this point of view. Having agreed on the basic principle, there was the widest possible divergence of opinion as to exactly how this goal should be achieved. Some services expected the intern to perform every laboratory procedure not normally carried out in the central hospital laboratory. On many of these services, when medical students acted as clinical clerks, they usually performed these tests and procedures. When students were on vacation, and on services to which students were not assigned, the burden of this work fell squarely on the intern. This policy was subject to considerable criticism from interns and residents. Since most clinical clerkships

TABLE 7

	Med.	Obs.	Ped.	Surg.
Per cent of interns who found "new patient" load to be excessive	10	8	13	6
Per cent of interns who found "old patient" load to be excessive	25	18	15	15

usually include a large amount of such work, there would seem to be some justification for the intern's point of view that performing large numbers of minor laboratory procedures with which he is already familiar is not the wisest use of his time. Particularly subject to criticism was the practice of assigning interns to a laboratory service as a separate block of time, during which he would perform various laboratory procedures on patients whom he had never seen and about whom he knew nothing more than appeared on the requisition slip.

Interns and residents are full aware of the educational value of doing some laboratory procedures in connection with the patients under their care. For them to do these tests conveniently and with a minimum expenditure of time, a small laboratory equipped for this purpose should be available on or near the wards. Although the majority of hospitals visited provided such laboratories in or near patient areas, the practice was by no means universal. Some of these floor laboratories were well equipped and provided ample working space for both students and house staff. When this was the case, it was not unusual to find the entire group on medical or pediatric ward rounds visiting the laboratory to look at a blood smear, examine a urine specimen, or review the sections of a recent biopsy. (This seemed to occur less often on surgery and gynecology.)

Other such laboratories, however, were grossly inadequate in some respects. Some were remote from the patient areas, were too small for the number expected to use them, or gave the appearance of general neglect and disorder. The student or house officer who must perform laboratory work under physical conditions which make it difficult to obtain reliable results is not likely to develop a very high regard for the accuracy and value of

laboratory procedures in general. Such laboratories help to develop a defeatist attitude regarding the proper use of the laboratory and encourage the performance of a "sink test" by some.

The policy of assigning interns to the blood bank also drew attention. Pathologists and clinical hematologists are well aware of the necessity for all physicians to learn the basic principles of good blood banking and blood transfusion therapy. Part of such education is to learn of the many pitfalls awaiting the inexperienced person attempting to type and cross-match human blood. Because of the increased hazard of error when these procedures are performed hurriedly or under great pressure, it would seem inadvisable ever to assign to an intern the sole or major responsibility for carrying them out. The safety and welfare of the patient are paramount in all blood banking procedures. Discretion dictates, therefore, that they be done by carefully trained, highly experienced personnel at all hours of day and night. There can be no objection to assigning an intern to work with the technician, but to substitute an inexperienced intern for skilled laboratory personnel would seem unwise educationally and medicolegally.

*Research activities.*—Each department was asked whether or not it encouraged or permitted interns to do research. Less than 5 per cent of the departments encouraged interns to do research, and most of these offered straight internships. Often the men permitted to participate in research were continuing work begun as medical students. A few departmental chairmen said that under special circumstances they would permit interns to participate in clinical research, but that few found it feasible to do so. In general, few medical educators in the hospitals studied felt that there was a place for research in a 12-month rotat-

TABLE 8

Service	Patients/Intern Range	Average	Ratio of Residents to interns
Medicine	9-27	17	1.0
Pediatrics	11-25	16	1.3
Surgery	15-35	23	2.0

ing internship, nor were the interns themselves inclined to desire this opportunity. Like their teachers, they felt that many other things had a higher priority on the limited time of the intern year.

Nevertheless, a number of straight internships did provide an opportunity for interns to obtain some experience in the broad field of clinical research. This might come through an assignment—often offered as an “elective”—to a special research ward. Some interns had found that this opportunity enabled them to gain a valuable perspective of the problems and satisfactions of clinical investigation. It also provided a unique setting in which the interns would work more closely with some of the most talented and stimulating teachers.

#### CHAPTER V—RELATION OF THE INTERN TO OTHER PERSONNEL

In trying to determine what an intern derives from his various experiences, it is necessary to take cognizance of his relationships with other members of the medical family of the hospital. Pertinent to this is the make-up of the group in which he functions. An attempt was made, therefore, to obtain a picture of the university hospital intern in the setting of the patients, students, residents, and senior staff who surround him.

#### PROFILE OF A TEACHING UNIT

Study of the published figures in the annual internship-residency number of the *Journal of the American Medical Association* conveys a distinct impression that the ratio of patients to interns

varies considerably from hospital to hospital. Table 8 indicates the findings of this study regarding the number of patients under care of an intern on the wards of each specialty, and the number of residents with whom he worked.

On the medical services, the range of patients cared for by one intern at any one time varied from a low of nine to a high of 27. Although all medical floors in a single hospital did not have the same patient load, the average number of patients per intern per service was calculated for each institution. The average “patient load” for medical interns was seventeen, and the median sixteen. Working with this intern, there was usually one resident with whom he was in close daily association. On some medical services, one resident might cover two wards, each of which had an intern, making the resident:intern ratio 0.5. At the other extreme were the hospitals in which two residents worked closely with each intern. The majority of hospitals, however, were so organized that there was a ratio of one medical resident per intern, and these two were immediately responsible for the care of seventeen patients. The number of students working with each intern varied from 0 to six. On some services these were third-year clinical clerks, whereas on others they were fourth-year students whose responsibilities resembled those of the intern.

The average patient load per intern on pediatric services ranged from a low of eleven to a high of 25. The median was fifteen patients per intern, and the average was sixteen. It should be emphasized that these figures pertain only to the general pediatric wards and do not include figures from the newborn nursery, premature units, or other special pediatric wards. Since more pediatric services had two residents per intern, the over-all resident:intern ratio was 1.3. Here again, the range was from

0.5 in some hospitals to 3.0 in others. In the latter instances, however, along with the intern, there was usually one second- or third-year resident who had limited supervision on the wards, and two first- or second-year residents who had more immediate responsibility for patient care. In such cases the third year, or senior resident's functions resembled closely those of an attending physician. The number of students attached to each teaching unit varied from 0 to 6, as on the medical services.

Surgical wards tended to be larger and the patient load per intern to be substantially higher. The number per hospital ranged from a low of fifteen to a high of 35. Five hospitals reported an average of fifteen patients per intern, and two reported as many as 35. The average for the entire group was 23 patients per intern, and the median was 22. As might be expected, surgical services had more residents per intern. This was understandable because of the nature and organization of surgical services. On the average two residents worked directly with each intern. This figure was somewhat more difficult to arrive at than that for medicine and pediatrics, since on some services as many as four residents had a voice in the management of the patients cared for by a single intern. These ranged from men in their last year of residency down to those in their first year. Where supervision by the more senior residents was infrequent (i.e., once or twice a week), they were not included in the calculations, but if the senior residents made it a practice to conduct daily rounds, then it seemed likely that they would have a voice in direct patient management, and these residents were therefore included in the calculations. Although there is room for disagreement with the exact figures arrived at in this manner, they nevertheless reflect the finding that surgical

services have more patients and residents per intern than do pediatric and medical services.

Because of the nature of obstetrical and gynecological services, they did not lend themselves to comparable analysis. A somewhat more realistic measure of an intern's activities on the obstetrical service was the number of deliveries he performed during this assignment. This varied tremendously. In some of the smaller hospitals and in those with a higher percentage of private patients, interns performed as few as ten deliveries, while in large municipal hospitals some did more than 100. Similarly, the intern's responsibilities in gynecology varied much more widely than they did on surgery. On some gynecological services, he was primarily an observer and had little to do regardless of the patient census. On others he functioned as a vital part of the team caring for all patients on his ward, as he would on surgery. The extreme variation in the role of the intern on gynecology made it impossible to obtain meaningful averages.

#### RELATIONSHIP OF INTERN TO STUDENTS

The presence of students on a majority of the services of the hospitals studied presented an opportunity to obtain information regarding the attitude of interns toward them and the effect, if any, of their presence on the learning opportunities of the intern. In the course of the personal interviews, varying opinions were expressed. The intern questionnaire quoted some of these verbatim and asked each man to indicate whether the statements were true or false as applied to his personal experience. The results are given in Table 9.

These figures substantiate the general impression obtained during interviews with interns that the presence of students on teaching services need not be a

TABLE 9  
EFFECT OF STUDENTS ON THE VALUE OF THE INTERNSHIP

Statement	True (Per cent)	False (Per cent)
1. Having medical students on most services made this a "better teaching internship" than if they had not been present	74	23
2. Medical students interfered with the intern's chance to learn by taking procedures away from him	3	97
3. Presence of medical students probably didn't affect my learning one way or the other	30	66
4. Having medical students around caused me to "read up" more than I might have done otherwise	49	48
5. Teaching medical students how to perform certain procedures helped improve my own technique	78	19
6. Having to teach medical students took time away from more important things I wanted to do	14	88
7. I now believe this internship would be better without students	3	94

disadvantage to the intern. In fact, 66 per cent of the interns felt that the presence of medical students had had a positive effect on their learning during internship (Statement 3). That this effect was overwhelmingly favorable was indicated by the fact that 74 per cent said that having medical students on their services made theirs a "better internship," whereas only 3 per cent said that they now believed their internship would have been better without students. Obviously none of the respondents could compare their experience to a similar one without students.

The reasons behind these attitudes were also explored. Some felt that the teaching rounds conducted by attending physicians were favorably influenced by the presence of students. Although admittedly some men tended to conduct rounds on an elementary plane when third-year clinical clerks were present, the usual effect was to encourage a livelier, more thorough discussion of the medical problems seen, including consideration of more than immediate patient care. Such rounds often led to personal discussion later among students and interns, thus giving the latter an opportunity to teach. This, many felt, was a very worth-while expenditure of

time, although many interns tended to underestimate the importance of their role as teachers of students.

Seventy-eight per cent (Statement 5) felt that the necessity for instructing students in the performance of various procedures caused them to become more certain of the indications for each, as well as the technique itself and the manner in which the physician allays patient apprehension. The degree to which students relieved interns of the more routine tests and laboratory work was a minor, but real, advantage to the interns in some hospitals.

In a few hospitals attention was called to the fact that on some services students were rarely seen, and their role was so unimportant as to be meaningless to the intern. When this was the case the intern was unable to count on students to be present for the demonstration of procedures, or to carry out any. Such a situation was usually a reflection of the attitude of the senior staff that daily patient care is not an appropriate concern of students. In general, interns in these hospitals missed the student contact and felt that the students, in turn, were being deprived of a valuable experience which could have been theirs as members of the clinical team having



responsibility for patient management.

The rather good agreement on the student-intern relationship reported here is undoubtedly partially attributable to the pre-selection that had occurred in this group of interns. Graduating medical students who had some aversion to intern-ship where there were students probably did not seek internships in major teaching hospitals. Nevertheless, it appears that faculty concern over the question of student-intern conflict has been greater than the situation warrants.

#### RELATIONSHIP OF INTERN TO RESIDENTS

It is hardly possible to overemphasize the importance of the resident staff in the picture of the internship. Interns themselves repeatedly stressed the critical role of the resident in intern education. Their opinions of residents they had known while in medical school had influenced some students in their selection of internships. Because of the close association between interns and residents, it was not surprising that the majority of interns on all services believed that they received the greater part of their active instruction from their senior house officers.<sup>5</sup> They recognized however, that the attending staff was more likely to discuss with them the fundamental aspects of disease processes,

<sup>5</sup> A separate study conducted by the Bureau of Applied Social Research of Columbia University obtained similar findings. For example, 75-80 per cent of their respondents indicated that they felt the resident staff to be as good as, or better than, the attending physicians in knowledge of current medical literature and action of the newest drugs. A total of 65 per cent felt that the house staff was as good as, or better than, the attending staff in the over-all management of patients, and 75 per cent felt that they were as good as, or better than, the attending staff in their over-all effectiveness as teachers. (Based on a study of members of the class of 1958 from Cornell, Pennsylvania, and Western Reserve during their internship in 1958-1959.)

TABLE 10

Q. "How many residents tended to work as a team with you, sharing the work load?"

(Per cent interns replying)

	Med.	Obs.-Gyn.	Ped.	Surg
Most	52	41	62	36
About half	26	25	22	32
Only a few	21	34	16	32

while residents were usually concerned with the immediate application of these principles to a specific and immediate problem. It was felt that both kinds of teaching were needed, and few wished to abolish either resident or attending rounds.

When interviewed about their experience on a particular service, interns repeatedly began their answer with the words, "Well, it all depended on the resident." They would then point out that if an intern were fortunate enough to be assigned to a resident who was a capable and interested teacher and able to delegate responsibility, he was likely to have a highly profitable experience. If, on the other hand, the resident was primarily interested in "running his own service," then the intern's role became restricted and less satisfactory.

Several questions designed to highlight the essential nature of the intern-resident relationship were included in the questionnaire. One asked how many of the resident staff tended to work as a team with the interns, sharing the work load. The response is shown in Table 10. It is noteworthy that 62 per cent of interns found that most pediatric residents tended to work as a team with them while the corresponding figures for internal medicine and obstetrics were lower. For surgery only 36 per cent felt this was true of most residents.

A companion question asked how many residents tended to take responsibility away from the intern. The replies to this question indicated that 7 per cent

TABLE 11

Q. "How many residents treated you as someone primarily to do their 'scut' work?"

Career choice	Medical residents	Per cent answering "most" for: Obstetrical residents	Pediatric residents	Surgical residents
General practice	4	14	8	29
Internal Medicine	-	24	10	23
Obstetrics-Gynecology	8	8	10	28
Pediatrics	9	22	4	28
Surgery & Surgical specialties	6	21	9	17
Psychiatry	4	20	10	31

of the interns felt that this was true of "most" medical residents; 19 per cent found it to be true of "most" pediatric residents, while the figures for obstetrics and surgery were 29 per cent and 33 per cent, respectively. The answers to these two questions create the impression that, from the intern's point of view, patient care on the medical and pediatric services is more likely to be a cooperative venture between resident and intern than it is on obstetrics, gynecology, and surgery.

A second pair of questions dealt with the resident's interest in teaching the intern as opposed to his interest in having the intern perform the chores of the service. The percentage of interns who found "most" of the residents to be willing teachers on the respective series was as follows: medicine, 79 per cent; pediatrics, 68 per cent; obstetrics, 60 per cent; surgery, 58 per cent. In contrast the percentage of interns who said that "half" or "most" of the residents treated them primarily as someone to do menial tasks was: medicine, 15 per cent; pediatrics, 29 per cent; obstetrics, 41 per cent; surgery, 51 per cent.

It has been suggested that the reaction of interns to the organization and teaching program of a department is determined to a considerable extent by their plans for future practice. We therefore subjected other data to analysis by career choice, and the results are shown in Table 11. It can be seen that this is true only to a very limited extent.

While it is true that the interns who felt least exploited by residents on each service were those who planned to go into that specialty, there was amazing agreement among all other interns as to the degree of the resident exploitation encountered on each service. It can also be seen that, over-all, medical residents rated highest with all groups of interns, followed by pediatric, obstetrical, and surgical residents in that order.

One of the reasons often cited for recommending to students that they take a university hospital internship is the large staff of residents available to assist, supervise, and teach the interns. However, when it is the firm conviction of 30-50 per cent of the interns going through certain services that their prime function is to serve the residents while receiving inadequate teaching from them, then there is need for a redefinition of the roles of interns and residents on these services.

Some of the larger clinical services have, in addition to the regular resident staff, a growing number of men designated as clinical or research fellows. Usually these men have had 2 or more years of residency training and are now working in subspecialties or engaged in some form of research. They are often called into consultation on the more difficult diagnostic problems or for patients requiring special studies. The question has been raised whether such fellows and special residents might not interfere

with the intern's responsibility for those patients whom they are asked to see. However, two-thirds of the respondents on every service indicated that this rarely happened. Equally interesting was the frequency with which interns considered consultation by fellows and special residents to be a worth-while learning experience. The percentage indicating that at least half of such consultations resulted in valuable teaching was as follows: medicine, 84 per cent; pediatrics, 71 per cent; surgery, 60 per cent; obstetrics, 50 per cent. Because interns on the medical service were more readily available, they seemed to make more of an effort to be present when these consultations were conducted. On obstetrics-gynecology and surgery, however, the intern was often unable to be present during consultations, and these learning opportunities were therefore lost to him.

We believe that special residents and research fellows do not constitute any particular problem at the present time. If, however, the trend toward a larger number of such appointments continues, this may become a problem unless effort is made to prevent it. It would be unfortunate if these consultations, which can be so valuable to the intern, should result in his loss of patient responsibility, for he would then be tempted to request such help less often.

#### RELATIONSHIP OF INTERN TO SENIOR STAFF

Whereas the data of the preceding section all emphasize the importance of residents in intern education, it must not be concluded that there is no place for attending physicians, who, after all, are the teachers of the residents. Interns respect and appreciate the more mature judgment of attending physicians, and, while the resident is often the active teacher of the intern, even when the

attending physician is present, all in the group recognize that the latter is an interested and informed moderator of the teaching session and as such will interrupt to correct errors and offer additional information or suggestions.

It was pointed out in an earlier section that in selecting an internship the opportunity to work closely with the senior staff was considered to be of major importance by 51 per cent of the interns. Interviews revealed that many interns were disappointed in the opportunity they had for such contact. By questionnaire, 53 per cent of them indicated that they were dissatisfied with their opportunity to work closely with the senior staff. Because this result was not adequately anticipated, the questionnaire was not designed to elucidate precisely wherein the senior staff had failed to provide this opportunity. It was recognized, however, that, while some of the most stimulating teachers were on the part-time or volunteer faculty, pressures of private practice often prevented them from devoting as much time to the house staff as would have been desirable. It was difficult to justify this situation, since the private service of the university hospital gave these men an unequaled opportunity to establish contact with interns and to teach them in a most favorable environment.

It was obviously not possible for a hospital to provide an opportunity for every intern to have considerable personal contact with each member of the senior staff. Nevertheless, interns and residents of each hospital were asked how available to them the full-time and part-time members of the senior staff were. The resident staff of every department felt overwhelmingly that the full-time staff members were readily available for all necessary assistance and as much teaching as could be desired. Although the intern staff tended to agree, their feelings

in the matter were somewhat tempered by their impression that they were not free to approach the senior staff directly but, in general, only through the residents.

The attending physician's attitude toward the intern had a profound effect on their relationship. If it was one of indifference or merely tolerance, a barrier inevitably developed. A more satisfactory basis for a successful association of attending physician and intern was for the attending physician to be a successful teacher. The style of pedagogy could vary with the individual teacher, but whatever his technique, the keen intern could easily distinguish the "good teacher" from his less effective colleagues.

It was clear that any attempt to substitute other professional attributes or social activities for good teaching did not suffice. Respondents were asked if the professional staff collectively or as individuals arranged for any social activities for interns, and 53 per cent replied, "yes." Of these, only 60 per cent felt that such activities contributed significantly toward making the intern year more pleasant. Having won the intern's respect and confidence as a physician and teacher, the staff man's social invitations were welcomed by interns, but lacking this success, such invitations were often resented.

#### RELATIONSHIP OF INTERN TO HOSPITAL ADMINISTRATIVE STAFF

Because administrative policy influences the character of an internship, attention was directed toward this. It was surprising to learn that 35 per cent of the interns had had no personal contact with the hospital administrator or his assistants. Less than one-third of the interns felt that they had learned anything concerning the role of the hospital administrator, the business side of running a hospital, or the relationship of

the medical staff to administration and the board of trustees. Although 77 per cent of the respondents said that they were familiar with the actual cost to patients of some medications, laboratory tests, and x-rays, when asked how many felt that they could probably make an informed judgment on a problem involving hospital administration and medical staff, 65 per cent said they would be unable to do so. Recognizing that after having an internship a physician might be in a better position to appreciate administrative problems, the following question was asked: "Do you feel it would be valuable to you in practice if you had some opportunity during a residency to learn more of this side of medicine?" A total of 68 per cent answered, "yes."

This would seem to be important. The man who goes into private practice without understanding or trying to understand something of the business and administrative side of hospitalization is in a poor position to advise his patients wisely, and in an even less advantageous position to discuss with them logically such current questions as governmental subsidy of medical care for all.

It was of interest to learn what factors promote antagonism toward hospital administrators so early in a house officer's career. Two questions pertaining to this were asked: 1. "Does the hospital administration *seem interested* in problems that arise involving house staff; e.g., satisfactory living conditions, stipend, providing necessary equipment?" The respondents were equally divided on this point. 2. "Is the administration sufficiently aware of the house staff needs to solve these problems competently?" To this, 52 per cent replied "yes," 42 per cent "no," and 6 per cent did not respond. It would appear, then, that hospital administrators, as a group, share the responsibility for the development

of the attitude of antagonism. Through whatever mechanism will be most effective, administrators should discover the needs and problems of the house staff and apply themselves to their speedy solution before a small difficulty is magnified, in the house officer's eyes, into a major one.

Specific examples of the failure to do so abound. For example, one hospital purported to provide examining equipment on each floor, but on one unit, an ophthalmoscope, had been "on order" but undelivered for 3 months. In another hospital it was discovered that the house staff seriously disliked the type of intravenous set in use. Rather undesirable living conditions were the source of discontent in several hospitals. Insofar as the interns knew, hospital administrators were either unaware of the interns' feelings about these matters or were somewhat indifferent toward them. If inadequate financial resources were behind the failure to correct these situations, this had not been pointed out to the house staff.

A third question pertaining to hospital administration asked if there had been any specific difficulty between the house staff and administration during 1959-60. Sixty-five per cent of interns said, "no," and 7 per cent did not answer. Although only 28 per cent indicated that there had been some difficulty, it was apparent from the details provided that there was no hospital that had not had at least minor trouble. Of course, the most frequent source of criticism was the food provided! Some of the serious criticisms were (a) admission procedures and policies resulting in poor timing of admissions so that a disproportionately large number of patients are admitted electively in late afternoon and evening when only part of the house staff may be on duty; (b) failure to employ competent or adequate numbers of ancil-

lary personnel—(This was a most serious complaint of interns in some municipal hospitals. It is highly important that both educators and administrators take cognizance of the problem, for the extra burden of work that falls unnecessarily upon the intern in these hospitals was found to be seriously undermining the morale of the house staff, and was calculated to make unpopular what otherwise were excellent internships); (c) failure to clarify sick benefits—(Some hospitals did not make it clear whether their hospitalization policies covered the intern's family or not. In other instances, house staffs felt that they were unjustly charged for medications); (d) poorly organized or inadequately operated blood bank; (e) poor cooperation in obtaining autopsies; (f) failure to provide adequate house staff facilities—(This included overcrowding, poor telephone call service at night, or quarters in a physical plant which badly needed renovation.)

Without comment, one intern simply answered the question with the following list of difficulties at his hospital: "Salaries, food, lab supplies, laundry, house staff accommodations, parking, records!"

#### RELATIONSHIP OF INTERN TO OTHER HOSPITAL PERSONNEL

The effect on the internship of insufficient or incompetent secretaries, nurses, ward aides, and orderlies has been alluded to above. The nursing shortage, in particular, bears directly on the internship. Some house officers indicated that they considered the nursing coverage on some floors so inadequate during certain hours that they were not confident that their orders would be properly carried out. The burden of clerical work required of interns in most hospitals is so great that anything which can be done to decrease it is desirable. Instead, in



some hospitals, failure to employ ward secretaries or others who can relieve the intern of some of this clerical load has resulted in an ever-increasing volume of such work for him.

The Study Director met one of his former students interning in a large city hospital. He was pushing a small child down the corridor to the x-ray department. When the intern was questioned as to why he was performing this duty, he replied that the child was quite ill, and that he was afraid that the orderlies available would not get the child to x-ray and back to the ward without unnecessary delay and exposure to hospital drafts.

No attempt was made to quantitate the magnitude of such problems. It did not seem to fall properly with the province of this study to do so. Attention is called to them so that those responsible for the teaching programs in all hospitals may be aware that administrative policies and nonprofessional personnel in a hospital can have an important bearing on the success or failure of an intern-residency program.

#### CHAPTER VI—ROLE OF THE INTERN

##### 1. ANALYSIS BY SPECIALTY OR HOSPITAL AREA

As the objectives of the Study state, the day-to-day activities of the intern on each of the major clinical services were of major interest. Interns were asked to indicate how often they had performed certain duties and procedures common to all internships. The profile of the answers to this question is shown in Chart 1.<sup>6</sup> The following discussion is based on the answers to this question and on observations made during the hospital visits.

*Internal medicine.*—Rotating interns often pointed out that medical services had certain inherent features which

made them particularly well adapted to meet the needs of the physician in his first year of graduate training. Among these were: the wide variety of diseases; the wide age range of its patients; the relatively large amount of time available for bedside rounds, conferences, and personal discussion with residents and attendings; an organization which gave the intern a prominent role in the definitive management of his patients. Because of these and similar factors related to the nature of this specialty and the organization of its teaching programs, we were particularly interested in observing the role of interns on medical services.

Chart 1 shows that most interns were responsible for taking the medical history, doing the admission physical examination, and making a written record of their findings for over 75 per cent of ward and private patients admitted to the medical service (score 498). Almost

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<sup>6</sup>Explanation of relative frequency scores given for intern duties.

Interns rated their performance of each duty according to the code:

- (1) - Performed duty himself 75% or more of time.
- (2) - Performed duty himself 25-75% of time.
- (3) - Performed duty himself less than 25% of time.

An arbitrarily weighted point value was assigned to each code number. The percentage of respondents assigning each code number to each procedure was calculated. These percentages were then multiplied by the point values. The resulting sums were totaled, and a relative frequency score was obtained for each procedure.

A maximum score of 500 would have resulted if all interns had done a procedure 75% or more of the time. A minimum score of 100 would have been obtained if all interns had done the procedure less than 25% of the time.

As the score rises toward 500 it indicates that a greater percentage of interns performed the procedure more often; conversely, as the score drops toward 100 it indicates that a greater percentage had performed the duty less often.



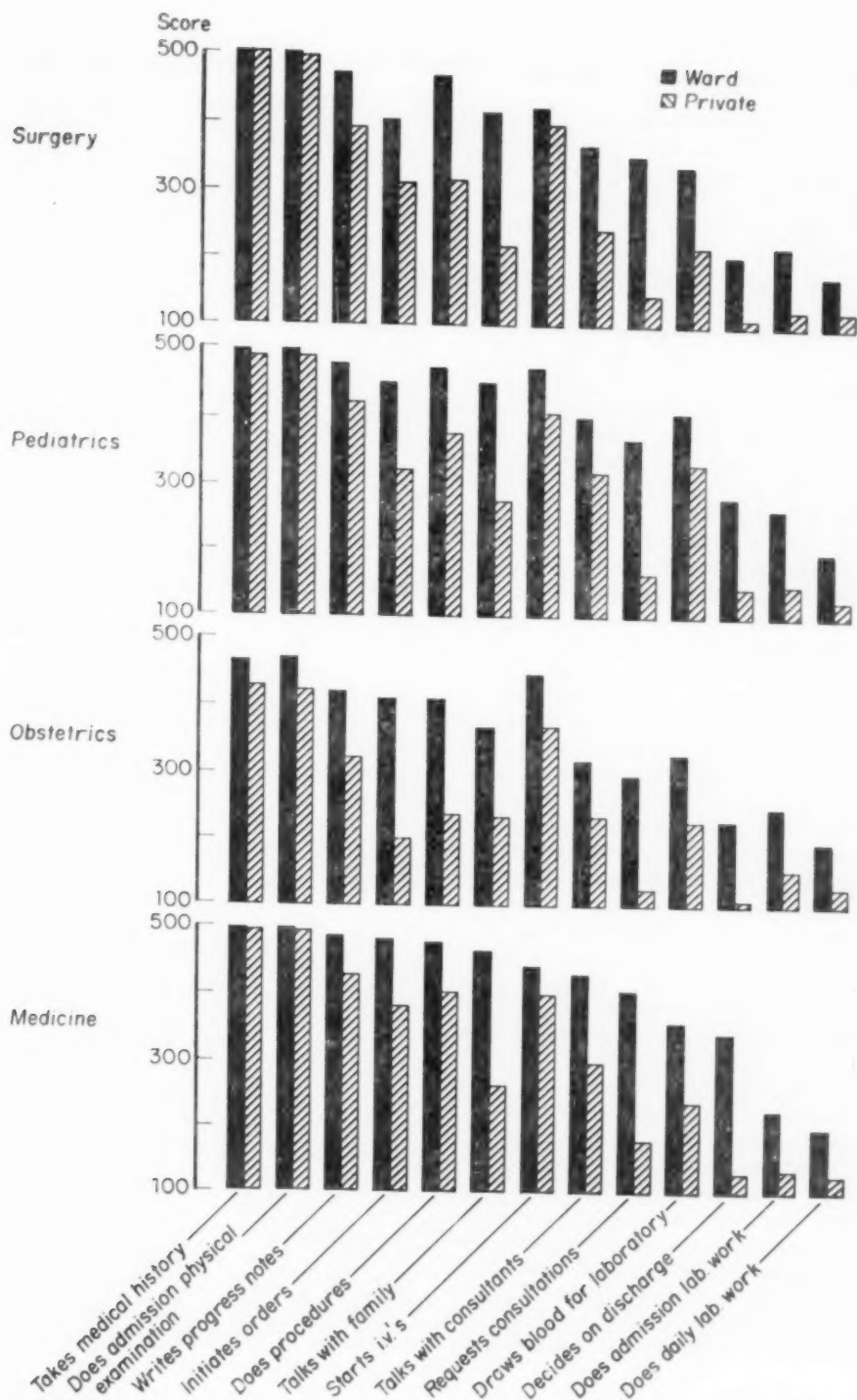


CHART 1—Scores indicate the relative frequency with which interns performed the indicated duties on ward and private patients of each specialty.

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#### CHAPTER VI—ROLE OF THE INTERN

##### 1. ANALYSIS BY SPECIALTY OR HOSPITAL AREA

As the objectives of the Study state, the day-to-day activities of the intern on each of the major clinical services were of major interest. Interns were asked to indicate how often they had performed certain duties and procedures common to all internships. The profile of the answers to this question is shown in Chart 1.<sup>6</sup> The following discussion is based on the answers to this question and on observations made during the hospital visits.

*Internal medicine.*—Rotating interns often pointed out that medical services had certain inherent features which

made them particularly well adapted to meet the needs of the physician in his first year of graduate training. Among these were: the wide variety of diseases; the wide age range of its patients; the relatively large amount of time available for bedside rounds, conferences, and personal discussion with residents and attendings; an organization which gave the intern a prominent role in the definitive management of his patients. Because of these and similar factors related to the nature of this specialty and the organization of its teaching programs, we were particularly interested in observing the role of interns on medical services.

Chart 1 shows that most interns were responsible for taking the medical history, doing the admission physical examination, and making a written record of their findings for over 75 per cent of ward and private patients admitted to the medical service (score 498). Almost

<sup>6</sup>Explanation of relative frequency scores given for intern duties.

Interns rated their performance of each duty according to the code:

- (1) - Performed duty himself 75% or more of time.
- (2) - Performed duty himself 25-75% of time.
- (3) - Performed duty himself less than 25% of time.

An arbitrarily weighted point value was assigned to each code number. The percentage of respondents assigning each code number to each procedure was calculated. These percentages were then multiplied by the point values. The resulting sums were totaled, and a relative frequency score was obtained for each procedure.

A maximum score of 500 would have resulted if all interns had done a procedure 75% or more of the time. A minimum score of 100 would have been obtained if all interns had done the procedure less than 25% of the time.

As the score rises toward 500 it indicates that a greater percentage of interns performed the procedure more often; conversely, as the score drops toward 100 it indicates that a greater percentage had performed the duty less often.

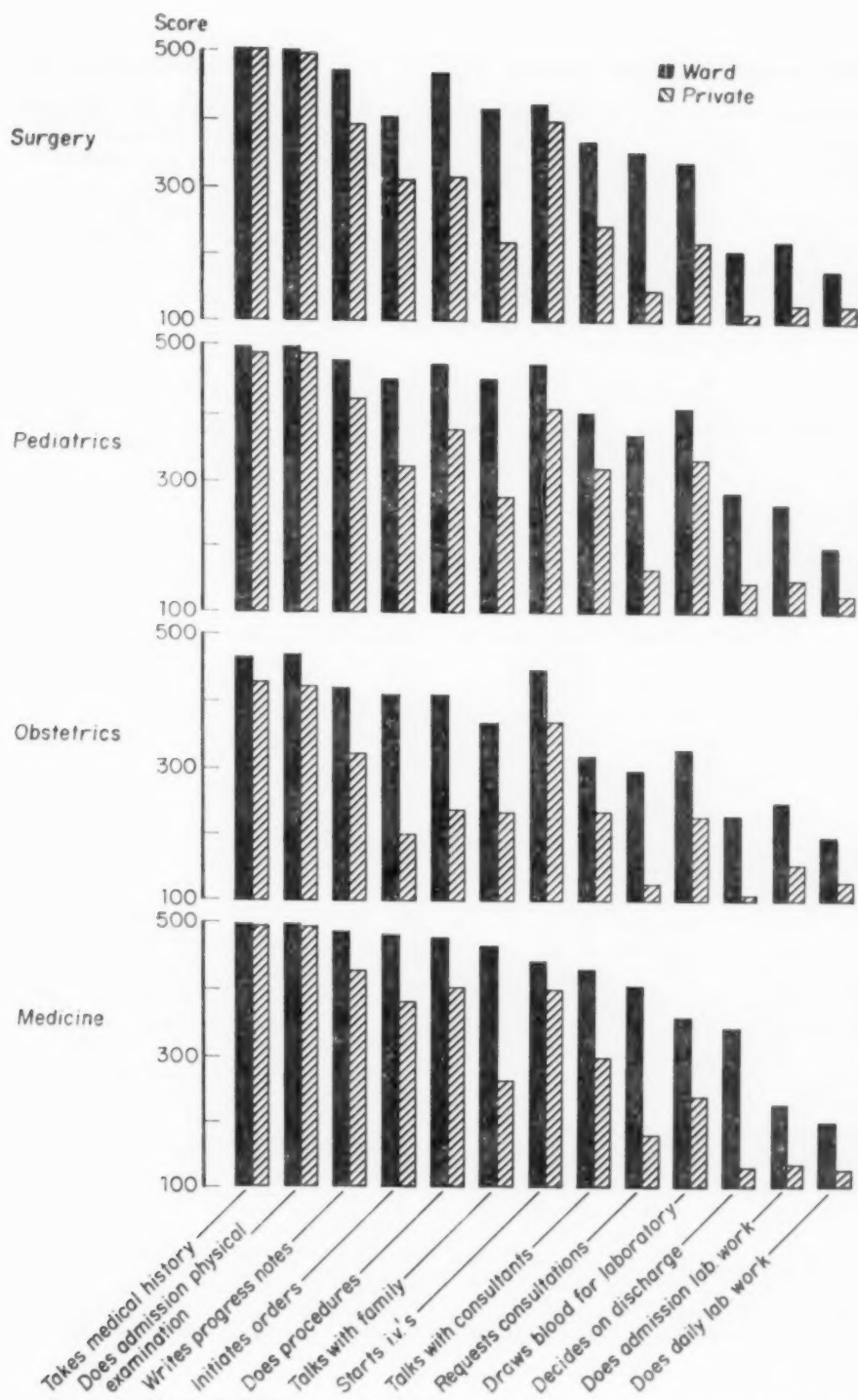


CHART 1—Scores indicate the relative frequency with which interns performed the indicated duties on ward and private patients of each specialty.

as often, the intern had a major responsibility for initiating orders and writing daily progress notes on ward patients. In contrast to this, his responsibility for progress notes was less on private patients (score 426), and for initiating orders he scored 378. Because hospitals vary in their policies, the intern's responsibility for these duties on a particular private service was in some instances considerably less than this. As to the intern's responsibility for procedures other than the starting of intravenous therapy, the relative score was 474 for ward patients and about 400 for private patients. He was responsible for starting roughly the same percentage of infusions on both ward and private patients (score of 438 and 400).

In rather sharp contrast to this, however, was the frequency with which the intern "talks with the patient's family about diagnosis, prognosis, progress, etc." He had the major responsibility for this most of the time with ward patients (score 460) but less than half of the time with those on the private services (score 260). A similar phenomenon occurred in regard to talking with consultants. Whereas for ward patients the intern appeared to feel that this was his responsibility most of the time (score 430), he did so less than 50 per cent of the time for private patients (score 294). This difference between ward and private patients was an interesting point, since it involved no decisions on the part of the intern but was rather an opportunity for him to participate in a learning experience which should have been of equal value to him on both services. Apparently, interns did not feel that they were expected to participate in or benefit from private consultations to the same extent that they did from consultations on ward patients. The fact that private consultants often did not bother to call the intern when seeing pa-

tients also entered into this. As might have been expected, the intern initiated the request for consultation most of the time on ward patients (score 404) but only about one-third of the time on private patients (score 176). The remaining items showed a large difference in the intern's role in caring for the ward and private patient. Whereas he frequently drew blood samples from ward patients, he did so only half as often on private patients. He felt that he made the decision regarding discharge about 55 per cent of the time with his ward patients (score 338) but only rarely on private patients (score 128).

The last two items charted were asked in the following manner: "What percentage of time does the intern 'do the admission lab. work,' and 'do the daily blood counts, urine, and stool exams, as indicated?'" Although interns were bitter about the amount of routine lab. work they were required to do on a few services, it would appear from the answers to these questions that this was not a major problem in most of the programs. The figures show that on the medical service the intern had a major obligation for the actual performance of admission lab. work only 30 per cent of the time on ward patients (score 223) and a much smaller percentage of the time with private patients (score 132). He had little of the follow-up laboratory work to perform on private patients (score 126). It must be remembered, however, that these figures are averages and that on certain individual services interns were expected to perform routine admission and follow-up lab. work on 100 per cent of their patients.

*Obstetrics.*—Referring to the intern's responsibilities in the same order in which they were considered for the department of medicine, it may be seen from the chart that the intern considered himself to be primarily responsible for

the admission history and physical examination approximately 90 per cent of the time on ward obstetrical patients, but only about 80 per cent of the time with private patients. While it was his duty to write progress notes, initiate orders, and carry out procedures about 75 per cent of the time with ward obstetrical patients, he wrote progress notes only 55 per cent of the time on private patients (score 320) and scored only 200 on initiating orders. He carried out procedures with about the same frequency. In general, he seems to have had less responsibility for talking with the families of obstetrical patients, but the difference between the frequency with which he did this with private and ward patients remained about the same as for the medical service. Here again he was responsible for starting intravenous therapy on the majority of patients regardless of their hospital classification. He rarely requested a consultation on a private obstetrical patient and, in fact, did this only about 50 per cent of the time with ward patients. Similarly, he felt obligated to be present for only half of the consultations on ward obstetrical patients and about one-third of those on the private patients. His role in the drawing of blood and the performing of laboratory procedures was approximately the same as on the medical service, but when it came to making a decision to discharge patients from the obstetrical service, the intern did this only one-third of the time with ward patients and almost never made this decision on private patients.

*Pediatrics.*—In general, the profile of the intern's activities on the pediatric service was quite similar to that on the medical service. On pediatrics he was responsible for initiating orders somewhat less often on both ward and private patients, but the ratio between the two remained the same as for medicine. On

pediatrics, too, he was the one most likely to perform procedures, talk with the family, and start intravenous therapy. His role in requesting consultations and talking with consultants was comparable to that on the medical service. He was more likely to be responsible for drawing blood on both ward and private patients than on medicine. This was, in part, a reflection of the increased difficulty of this procedure in children, making it less likely that medical students could relieve him of the task. Although he was more likely to make a decision regarding the discharge of pediatric patients than obstetrical, he did so less often than with the adult medical patient. His load of laboratory procedures, both admission and follow-up was quite similar to that on medicine and obstetrics.

*Surgery.*—Here again the intern did the admission work-up on almost all patients. He wrote progress notes on nearly all the ward surgical patients and about 70 per cent of the time on private patients. Whereas on ward medical patients the intern initiated orders about 95 per cent of the time, he did so only about 70 per cent of the time on ward surgical patients and 50 per cent of the time on private surgical patients, as opposed to 75 per cent for private medical patients. Although surgery is often considered a service in which the intern is busy with procedures in providing patient care, it is noteworthy that on ward surgical patients the intern performed the more common procedures about 10 per cent less often than on ward medical patients. On private surgical patients he performed these procedures only about 50 per cent of the time, as opposed to 75 per cent of the time for the private medical patients. We believe this difference reflects the more complicated nature of the procedures done on the surgical patient and

TABLE 12  
 INTERN RESPONSIBILITY FOR WARD PSYCHIATRIC PATIENTS  
 (% interns answering "Much")

Taking admission history	88	Initiating orders	76
Doing admission physical exam	98	Requesting consultations	79
Drawing blood for laboratory	77	Talking case over with consultant	74
Doing lab. work (C.B.C., urines)		Deciding when patient is ready for discharge	29
Doing procedures (e.g., L.P., starting I.V.'s, etc.)	88	Talking with patient's family about diagnosis, prognosis, etc.	50
Writing progress notes	55		
Giving electro-shock therapy	11	Management of nonpsychiatric aspect of patient's illness (diabetes, heart failure, etc.)	95

also the tendency for residents in surgery to perform procedures more often than those in medicine.

On surgery the intern less often had the responsibility for talking with the families of ward and private patients. He apparently had a little more help in starting intravenous therapy than did the interns of other services. As in obstetrics he rarely requested consultations for private patients but did so about 60 per cent of the time for ward patients. He was present for about 60 per cent of the ward consultations but for only about 25 per cent of private consultations. His responsibility for drawing blood, performing routine laboratory procedures, and discharging patients was similar to that of the intern on the obstetrical service but less than that of the medical intern.

*Psychiatry.*—Twenty-three per cent of the respondents had completed an assignment on the psychiatric service. These were asked to indicate how active a role they had had in the management of ward psychiatric patients. In addition to those items evaluated for all services (i.e., taking admission history, doing physical examinations, initiating orders, etc.), two others were added. These were "giving electro-shock therapy" and "management of non-psychiatric aspects of patients' illnesses (diabetes, heart failure, etc.)." The replies

to these questions are shown in Table 12.

Approximately 75 per cent indicated that they had had "much" responsibility for most of these duties, but for five of the duties listed fewer than 75 per cent had had "much" responsibility. In order of a decreasing amount of responsibility these were: writing progress notes (55 per cent); talking with patient's family about diagnosis, prognosis, etc. (50 per cent); deciding when the patient was ready for discharge (29 per cent); doing laboratory work, such as blood counts and urine analyses (23 per cent); giving electro-shock therapy (11 per cent). It was of interest that 95 per cent of the interns who had been on psychiatry felt that they had a major responsibility for the management of the nonpsychiatric aspect of the patient's illness.

It would appear, therefore, that the intern's role on psychiatry was quite comparable to that on other services, except that he seems to have had less responsibility for contact with the patient's families and for making decisions regarding therapy. It was expected that his participation in administering electro-shock therapy would prove to be a minor one.

It had been hoped that some comparison could be made between the role of the intern on private and ward psychiatric patients. This was not possible, since 74 per cent of the respondents in-



dicated that practically all their patients were public. The few who had been involved with both indicated that they had more responsibility for the ward patients than they did for the private patients.

*Emergency department (E.D.).*—Of the interns who had been in the emergency department, 90 per cent had the assignment as a separate block of time, and 95 per cent indicated that they worked days as well as nights during this assignment. However, 30 per cent indicated that, even though their emergency room duty was a separate block of time, it was simultaneous with some other assignment. From information obtained during the hospital visits, it was known that this situation obtained in the hospitals which had less active emergency rooms. In these institutions the intern participated in other assignments when there were no calls for his services in the emergency department.

The emergency service came under the jurisdiction of the surgical department in some hospitals, under internal medicine in others, and was independent of any specific department in most large hospitals. Men in rotating and mixed internships indicated that their emergency room assignment was considered to be part of their surgical experience more often than medical, although for some it was both.

Table 13 gives the response to part of the question pertaining to the emergency department. The figures show that the vast majority of interns who had worked in emergency departments found enough to do. At the same time, 46 per cent found the patient load to be so excessive that they were unable to do their best work. In part, this subjective feeling of haste and inefficiency may have been a reflection of the intern's sense of insecurity when called upon to make judgments rapidly and with what

TABLE 13  
EMERGENCY DEPARTMENT EXPERIENCE

	Yes (Per cent)	No (Per cent)
Was the patient load adequate?	94	6
Was the patient load excessive?	46	54
Was the E.D. well organized?	75	25
Were there usually enough ancillary personnel?	68	32
Could you follow patients you admitted from E.D.?	44	56

he considered to be inadequate experience. On the other hand, the hospital visits revealed that an enormous number of patients came to the emergency departments of some of the larger municipal hospitals for treatment. When one intern may see 35 to 50 patients in an 8-hour period in the emergency room, there may be serious doubt that this experience reaches a very high educational plane.

It seems likely that such a volume of work serves only to teach a man to take short cuts in eliciting a medical history, to perform a cursory physical examination, and to make "snap judgments" regarding diagnosis and therapy. Under such difficult circumstances it is understandable that an intern might have a great sense of elation when his judgment proves to be correct, but this type of experience seems hardly in keeping with the standards of medical practice usually prevailing in university hospitals.

The problem of continuity of medical experience arose here again. Of the interns questioned, 44 per cent thought that they had opportunity for adequate follow-up on patients whom they admitted from the emergency department. The 56 per cent who did not have such an opportunity missed a valuable segment of the medical experience to be derived from working with acutely ill patients. A number of administrative problems must admittedly be overcome

before it is possible for each intern to follow through on most of the patients whom he admits from the emergency room, but at some point in his year such an experience should be made available to him. In a number of hospitals, the nature of the E.D.-in-patient relationship was such that, while the intern worked in the emergency department, he would have the opportunity to diagnose such diseases as acute bacterial meningitis or pulmonary edema and to initiate therapy for them, but then he would have to turn the patient over to other house officers who continued the treatment. Under such an arrangement, the experience of all interns in managing similar acutely ill patients is broken into two artificial phases. They must then make an effort to fuse these experiences to form the complete picture.

Many interns looked upon their assignment to the emergency room as their first opportunity to be a "real doctor." By this they meant having the opportunity to be the first physician to see an acutely ill patient, arrive at a diagnosis, and proceed accordingly. Without wishing to minimize the importance of this aspect of the emergency room experience, this study was equally concerned that supervision and instruction from the resident staff and the attending staff be available to the intern. The amount and nature of supervision which interns received in emergency departments were therefore studied. For each service, approximately 50 per cent of the interns indicated that, when they saw a patient who obviously "belonged to one of the specialties," it was required that a member of the resident staff pass on the intern's judgment before final disposition could be made. The policies governing the other 50 per cent of interns varied. Several hospitals required that the intern call a resident if he wished to admit a patient, but not if he planned

to treat and discharge him. In others, it was not necessary for a resident to see a patient before he was admitted, but such a consultation was required before certain patients could be discharged from the emergency department.

Approximately one-fourth of the medical, obstetrical, and pediatric services assigned some member of the attending staff to "cover" (i.e., be available to) the house staff in the E.D. One-third of the surgical services did so. The majority of these men seldom came to the E.D. to give instruction to the intern pertaining to ward patients. These figures seem to indicate that the care of patients in the emergency department was pretty largely the province of the house staff. For those hospitals to which private as well as ward patients came to the emergency department for treatment, the staff physicians saw these patients there with the intern only about half the time. There was a tendency for the surgical staff to see private patients in the emergency room somewhat more frequently than was the case with other specialties. This was to be expected considering the nature of the complaints these patients presented.

When interns were asked if they would have liked more supervision in the emergency department by either residents or attending staff, 75-80 per cent said they would not. Based on comments made during the hospital visits, it seems likely that the 20-25 per cent who would have liked more emergency room supervision worked in municipal hospitals serving large cities and having a particularly large volume of patients coming into the emergency department. Interns in other municipal hospitals of similar size which, because of administrative policy, did not provide as large a proportion of the service needs of the populace, found their supervision to be entirely ade-

TABLE 14  
INTERN EXPERIENCE IN OUT-PATIENT CLINICS

	"YES"	MEDICINE	OBSTETRICS	PEDIATRICS	SURGERY
Did you work in O.P.C. on a regularly assigned basis?	(no.) (%)	521 43	423 35	557 46	520 43
Did you work in O.P.C. only occasionally?	(no.) (%)	61 5	47 4	37 3	85 7
Length of an Average Clinic Period					
Number of hours		3½	3½	4½	3
O.P.C. Patient Load ("New" Patients per Clinic Period)					
Per cent seeing "none"		27	24	9	37
Per cent seeing "5 or more"		6	13	24	6
Av. number of "new" patients per intern, per clinic period		1.8	2.6	3.7	1.7
Adequacy of "New" Patient Load					
Per cent answering "inadequate"		9	13	7	16
Per cent answering "excessive"		10	8	13	6
"Old" Patients for Follow-up Visits					
Per cent seeing "less than 5"		21	19	24	18
Per cent seeing "more than 15"		16	27	18	20
Average number of "old" patients per intern, per clinic period		8	10	8	9
Adequacy of "Old" Patient Load					
Per cent answering "inadequate"		5	9	9	5
Per cent answering "excessive"		25	18	15	15

quate. The availability of senior staff for consultation with the house staff of practically all hospitals studied received favorable comment.

*The out-patient clinic (O.P.C.).*—Less than half of the interns had an opportunity to work in the out-patient clinic (see Table 14). Adding those who worked in the O.P.C. only on an occasional basis brought the figure up to 50 per cent for surgery only. During the personal interviews, some interns indicated that a simultaneous in-patient assignment prevented their getting to the O.P.C.; however, analysis of questionnaire data revealed that only 6 per cent of the interns had this problem.

Of the interns working in medical out-patient clinics, 90 per cent said that they saw there some patients whom they had treated previously in the wards; the corresponding figure for surgery was 88 per cent, for pediatrics 75 per cent, and for obstetrics 70 per

cent. When this question was reversed, the ever-recurring break in the continuity of patient care was highlighted once more. The percentage who said they would continue to take care of patients whom they admitted to the hospital from the clinic was 34 per cent for medicine, 40 per cent for obstetrics, 29 per cent for pediatrics, and 60 per cent for surgery.

An attempt was made to determine what percentage of interns had their out-patient assignment as a continuous block of time rather than intermittently throughout the year. Owing to unfortunate ambiguity in the wording of the question, it was not possible to divide the respondents into two sharply defined groups. The figures indicated that a majority of the interns had this assignment as a separate and continuous block of time. Rotating interns, however, may have had more than one such block of time as they moved from

one specialty to another. It was not unusual for such interns to work for 1 or 2 weeks in the out-patient department of surgery and, later in the year, to spend a similar period of time in the medical out-patient clinic.

Only 20 per cent of the respondents indicated that they would have preferred more time in the out-patient clinic. Table 14 also summarizes the data on the patient load of interns working in O.P.C. Patients were classified into two categories—namely, "new" patients requiring a complete work-up and "old" patients returning for follow-up visits. Interns were requested to indicate the number of patients whom they saw per clinic period, and whether this number was excessive, adequate, or inadequate. A number of interns indicated that, in the usual clinic period, they did not see any new patients. Presumably, these were the clinics which confined themselves exclusively to follow-up visits by formerly hospitalized patients. Of those seeing new patients, the percentage who saw more than five per clinic varied from a low of 6 per cent in medicine and surgery to a high of 24 per cent in pediatrics. The majority therefore, saw between one and five new patients in a clinic period of 3-4½ hours.

How much meaning can be attached to the "average" number of new patients seen by an intern in a clinic period is not clear. Seemingly, however, the majority of interns felt that their new patient load was about right. In general, those who saw five or more new patients per clinic found the load excessive, but in pediatric clinics the percentage who saw five or more new patients exceeded the percentage who felt their new patient load was excessive. At interview, however, pediatric house officers pointed out that new patient work-ups in pediatric clinics were

not as time-consuming as those required in some other specialties. Moreover, pediatrics had the longest average clinic (4½ hours).

The wide variation in the number of patients seen for follow-up visits is indicated in the final section of Table 14. In the medical clinic, for example, 21 per cent of the interns saw fewer than five patients per clinic, while 16 per cent saw more than fifteen patients. Average figures showed a trend for the intern to see more patients in surgery and obstetrics than in medicine and pediatrics. Although the percentage of interns who saw more than fifteen follow-up patients per medical clinic (16 per cent) was less than that for other clinics, the percentage of interns who indicated that their old-patient load was excessive was the highest for medicine (25 per cent). This is probably a reflection of the more extensive and, therefore, more time-consuming examination required by many medical patients at the time of follow-up visits. As a consequence, the intern cannot adequately care for as many medical patients in the same number of hours. It should be noted that, for each specialty, the percentage of interns who felt that their old-patient load was excessive was higher than the number who felt that the new-patient load was excessive.

While the average figures given are believed to be representative of the situation in out-patient clinics, it seems likely that these should be thought of as a "maximum load" rather than a comfortable average. Indeed, the intern who can adequately work-up two new patients and see eight follow-up patients in a general medical clinic in a single morning or afternoon would have to be unusually competent, well-organized, and efficient. One aspect of the work-load in the out-patient clinic,

which unfortunately was not investigated, was whether or not the time given for the clinic included the time required for completing the record on all patients seen. In some clinics, provision was made for the house staff to dictate their findings on the patients seen, after the clinic period was over. In most it was necessary to write notes in longhand for each patient. In the majority of instances the time required for write-up of the record of new patients probably should be added to the time shown for an average clinic period.

## 2. GENERAL COMMENTS

In addition to the above comments regarding the separate specialties and hospital areas, it seems appropriate to add here a few observations which are pertinent to all services. Many interns were burdened with excessive paper work, running errands, and other activities which were quite important in the proper care of their patients, but which might well have been done by non-professional personnel. A frequent function of the interns on several services of one hospital was to obtain permission from various laboratories for special tests, go to the laboratory to get whatever special containers were needed, draw blood or fluid for analysis, and then carry these specimens to the laboratory. Other hospitals placed much emphasis on the completion of certain forms which became part of the permanent record. Some of these forms required the repetition of information which was already recorded in the usual history and physical examination. Apparently this information was transferred to special forms for the convenience of the record room personnel.

The importance of having a physician provide pertinent facts from the medical history and physical examination on requisitions for x-ray examination,

electrocardiography, and other procedures is not questioned. In view of the many demands upon the time of interns and residents, however, it would seem that every possible means should be utilized to increase the efficiency of performing such tasks and thereby reduce the time required. Dictating equipment, addressograph plates for stamping each sheet of the medical record and all requisitions, messenger service, pneumatic tubes, and numerous similar types of assistance greatly increased the efficiency of interns and residents in those hospitals which provided them.

## 3. PROCEDURES

Fifteen procedures which all interns might be expected to perform at one time or another were listed, and each respondent was asked to indicate how many times he had done these as a student and how many times as an intern. In a subsequent question each was asked to indicate whether or not the number of such procedures performed as an intern was "about right," "too many," or "too few."

The figures in Table 15 indicate the percentage of interns who had performed each procedure while he was a student and the approximate number of times each procedure had been performed. These figures are the gross totals for all interns; however, analysis of the data by type of internship showed that there was no difference among the intern groups regarding this aspect of their student experience. Apparently, the amount of procedure work a medical student performs is not a significant factor in determining which type of internship he will select.

Of interest was the number of medical students who managed to graduate without performing some of these procedures. It was not surprising that 95 per cent of interns had not done a

TABLE 15  
PROCEDURAL EXPERIENCE OF STUDENTS

PROCEDURE	0	APPROXIMATE NO. TIMES PERFORMED		over 25
		1-5	6-25	
Bone marrow aspiration	54%	41%	4%	—%
Sigmoidoscopy	26	55	14	3
Gastric intubation	3	24	44	27
Lumbar puncture	2	39	46	11
Thoracentesis	31	58	8	1
Abdominal paracentesis	52	42	4	—
(Drained) Abscess	34	49	12	4
(Sutured) Laceration	10	27	32	28
Closed reduction of fracture	81	17	1	—
(Applied) plaster cast	44	48	8	1
Pericardial tap	95	2	—	—
Venous cut-down	38	47	10	3
Delivery (forceps)	45	44	7	2
Delivery (without forceps)	3	16	48	32
(Performed & repaired) Episiotomy	24	40	27	6

pericardial tap as students. Some might consider it unfortunate that 52 per cent of students graduate without ever having performed an abdominal paracentesis. Three per cent said they had never passed a gastric tube, and 2 per cent had not performed a lumbar puncture as medical students. The wide variation in the amount of procedure work which medical students get to do is clearly shown by these latter two procedures, since 27 per cent had passed a gastric tube over 25 times as students, and 11 per cent had done more than 25 lumbar punctures. Experience varied similarly in regard to suturing lacerations. While 10 per cent of this intern group had never sutured a laceration as students, 28 per cent had done so more than 25 times. There was a predictably wide variation in the number of deliveries which they had performed while they were medical students. Three per cent indicated that they had never delivered babies without forceps. Since it seems unlikely that any medical student graduates from an American school without performing any deliveries, we can only conclude that these students had the somewhat unusual experience of applying outlet forceps on each occasion in

which they performed a delivery.

Because the experience of medical students is so variable, the question arises as to just how many procedures interns should perform to become reasonably proficient at each. An exact answer to this question cannot be given from the data obtained in this study, but the following figures may be of some help. From the larger list of procedures, six were selected for more detailed analysis. These are shown in Table 16. For five of the six procedures listed, the majority of the interns who reported "too few" had performed each procedure from zero to 5 times. Conversely, the interns who said the frequency with which they had done these procedures was "about right" had performed each one six or more times. Whereas few interns considered anything less than six performances to be adequate, there was no one figure which would be suitable for all. For example, 55 per cent of those who had done between six and 25 sigmoidoscopies felt this number was "about right," while 14 per cent of those who felt that they had done "too few" had also performed between six and 25. This emphasizes once more the necessity for attention to the individual requirements of interns.



TABLE 16  
PROCEDURES DONE DURING INTERNSHIP

Procedure	No. times performed	Interns answering "about right" %	Interns answering "too few" (%)
Sigmoidoscopy	0	2	34
	1-5	19	50
	6-25	55	14
	over 25	23	2
		78	
Lumbar puncture	0	-	6
	1-5	5	41
	6-25	36	41
	over 25	59	12
		95	
Thoracentesis	0	1	20
	1-5	28	66
	6-25	61	13
	over 25	10	1
		71	
Sutured laceration	0	3	28
	1-5	3	33
	6-25	19	18
	over 25	75	21
		75	
Applied plaster cast	0	4	43
	1-5	20	40
	6-25	30	16
	over 25	46	1
		76	
Venous cutdown for I.V. therapy	0	-	16
	1-5	14	53
	6-25	57	22
	over 25	29	8
		86	

It is not sufficient to assume that each intern will automatically have adequate opportunity to obtain the experience he desires or needs.

University hospital internships have been criticized by some as providing insufficient experience in procedure work for interns. Whether the data of this study support this criticism depends somewhat upon the point of view adopted. Of the entire sample, 1 per cent had failed to perform a lumbar puncture in their first 9 months, 8 per cent had done no thoracenteses, and 17 per cent no sigmoidoscopies. If the position is held that every future ophthalmologist, psychiatrist, and dermatologist should perform several of these procedures during his internship, then the programs studied were perhaps deficient in this respect. It was the impression of the observers, however, that the vast majority of the services

studied provided adequate opportunity for their interns to learn to perform most procedures. A few do not, either because residents exercise too freely the privileges of rank, because interns are not permitted to carry out these procedures on private patients, or because the services are too small to provide opportunity for all the students, interns, and residents assigned to them.

At the opposite extreme were those exceedingly busy hospitals in which, to meet the demands for service, interns must perform procedures long past the point of becoming proficient. In these hospitals the intern became quite adept with his hands but had too little time for other aspects of his training.

The experience of the rotating interns on obstetrics was of interest. Five per cent indicated that they had performed five or fewer deliveries without forceps, and 22 per cent indicated that

TABLE 17

INTERNS' RATING OF THE QUALITY OF INSTRUCTION RECEIVED REGARDING PROCEDURES (by type of internship)

Quality of instruction	Rotating	Straight medical	Straight surgical	Straight pediatric
Excellent	29%	44%	44%	52%
Good	54	47	44	42
Fair	13	6	11	6
Inadequate	2	1	—	—

they had performed five or fewer deliveries with forceps. Six per cent said they had done five or fewer episiotomies. Correspondingly, 9 per cent felt that they had done too few deliveries without forceps, 29 per cent too few with forceps, and 10 per cent that they had done too few episiotomies. On some services, however, interns performed as many as 100 deliveries.

Of equal or greater importance, was the quality of the instruction received by interns in the performance of procedures. Since the observers had no opportunity to assess this themselves, interns were asked to indicate whether the instruction they received was excellent, good, fair, or inadequate. The results are shown in Table 17.

These figures indicate a high degree of similarity in the experiences of all intern groups. It is noteworthy that a significantly smaller percentage of the rotating interns classified their instruction as "excellent." This finding may be interpreted in two ways. Perhaps the instruction given the rotating intern is not as good as that given interns

who are on a service for a longer period of time. Another interpretation (voiced during the personal interviews by some rotating interns) is that they are a bit more critical of the instruction given by the resident staff than are straight interns, since they have the opportunity to compare the teaching of residents of more than one specialty. The percentage of all groups who classified their instruction in procedure work as only "fair" or "inadequate" emphasizes again the importance of the residents in intern education, since this type of instruction is generally given by them.

#### 4. PATIENT LOAD (NEW PATIENT ADMISSIONS)

In an earlier section, the profile of a teaching unit of each of the major specialties was described. Consideration is given at this point to the number of new patients admitted to an intern in an average week of his tour of duty on each specialty.

*Internal medicine.*—The wide range of new admissions to the various medical wards is shown in Table 18 and Chart 2. One medical service had the small number of three to five new admissions per intern per week, while at the other extreme was the service which admitted from 20 to 30 new admissions per intern per week. A similar range of new admissions prevailed for public and private medical services. The lowest rate was three admissions per in-

TABLE 18  
NEW PATIENT ADMISSIONS PER INTERN PER WEEK

	No. services reporting	Low range	High range	AVERAGES	
				Below 7 No. (%)	Above 15 No. (%)
Medicine	35	3-5	20-30	3 (9)	8* (23)
Pediatrics	19	4-5	10-20	2 (10)	2 (10)
Surgery	24	5-9	30-40	0 (0)	9* (37)

\* Four of these reported an average of 20 or more.

tern per week, and the highest was 30. For those floors which admitted both private and ward patients, the range was somewhat narrower. From the table, however, it is apparent that the majority of services admit between seven and fifteen patients per week per intern whether they are strictly private, strictly ward, or mixed. Only six hospitals had services on which interns averaged more than twenty new patients per week. Four of these had medical services which admitted patients at this rate.

**Pediatrics.**—Information was available for only nineteen pediatric services. This pertains to the general pediatric wards and does not include newborn nursery or special pediatric units. Of the nineteen, all but one admitted patients at a rate of five to twenty patients per intern per week. This hospital indicated only four to five new patients per intern per week.

**Surgery.**—Of the 24 services for which figures were available, the majority had five to twenty new patients per intern per week. To five of the 24, however, patients were sometimes admitted at a rate exceeding twenty per intern per week, and one service indicated that on its general surgical wards twenty was the low rate while 40 was its maximum. Four surgical services averaged twenty or more new patients per intern per week.

Some explanation of these figures is appropriate. These estimates were made by members of the intern and resident staff. They were arrived at by agreement of one or more groups and were not estimates of individuals. Even though they are approximations, they appeared to be reasonably accurate when checked with senior staff and head nurses. It should be borne in mind, however, that an individual intern would not be likely to do the ad-

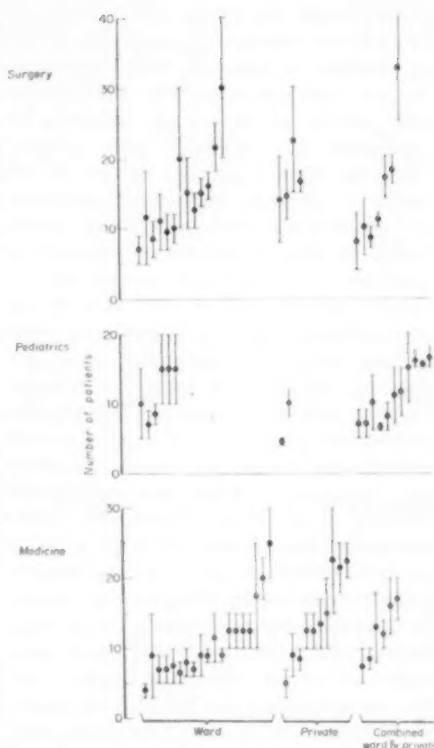


CHART 2—Range of new patient admissions, per intern per week, to individual services of each specialty.

mission work-up on all of 30 or 40 new patients admitted to him in a single week. Most of the hospitals in the study did not require their interns to be on duty every night. The rates given included those patients who were admitted to a service during the intern's "nights off" and were worked-up by other members of the house staff. Some of these patients required additional work-up by the regular floor intern when he returned the following day, but others, particularly patients admitted for emergency surgery, were his responsibility only for postoperative care.

As the study progressed, it became

obvious that it would be exceedingly difficult to recommend a precise figure as the ideal number of new admissions for one intern in one week. The volume and nature of the work involved in admitting new patients vary greatly with the service and the nature of the patients' illnesses. During an epidemic of infantile diarrhea, a pediatric intern might be able to admit, and adequately care for, a far greater number of patients than would be the case if he encountered a series of patients with difficult diagnostic problems. An intern on the medical service might be able to care for a number of patients with other illnesses in the same period of time that would be required to admit and adequately treat one patient in diabetic coma. Many interns felt, however, that fifteen patients with a "normal" distribution of illnesses was a "comfortable" load. This number might be exceeded for short periods of time without diminishing the quality of care rendered or the educational value of the experience to the intern, but to do so consistently, as was the case with the busiest services studied, imposed a patient load which was excessive by all parameters used.

Interns were asked if they would like to have a limit placed on the number of patients that could be admitted to them in a 24-hour period. None of those questioned on this point felt that this would be desirable. It was the general experience that on a well-run service admitting patients at random, the excessively busy periods were balanced by less hectic periods of equal length. Most men were well aware that the internship was an excellent opportunity to become accustomed to the variable demands upon time which any physician in clinical practice is likely to encounter throughout much of his professional life. They also felt that any

attempt to limit the number of new admissions by some arbitrary formula would be likely to restrict artificially the variety of diseases and disorders which each man would have an opportunity to see and treat.

#### 5. RESPONSIBILITY AND AUTHORITY

Anyone who has reviewed the organization of an internship program knows how frequently the term "responsibility" comes into the discussion. When senior medical students were asked to cite those things which they felt an internship would be most likely to add to their medical education beyond their student experience, almost all listed responsibility among the first three. To many students and interns, this is the *sine qua non* for measuring any internship. Closer examination of this matter, however, reveals that there is considerable ambiguity in the use of the word. As used by most students and house staff, it is synonymous with "authority," that is, the right or privilege of undertaking some phase of the professional care of an ill person. To the more experienced physician, the word not only means authority to care for the patient, but is synonymous with "obligation" to render the best professional care available. The two meanings of the word are inseparable in medical practice, and, although the first may appear to be uppermost in the conscious minds of interns, the second is certainly there in the unconscious. For example, as the intern matures he recognizes his obligation to use consultative services freely and learns that accepting a consultant's advice does not mean he has relinquished his authority.

With these limitations in mind, interns were asked to rate their responsibility for the management of private and ward in-patients. A four-point scale was used in which zero (0) represented no re-

TABLE 19  
INTERNS' RATING OF THEIR RESPONSIBILITY FOR PATIENTS

	MEDICINE	OBSTETRICS	PEDIATRICS	SURGERY
		Private patients		
Great deal (3)	17%	5%	17%	6%
Moderate amount (2)	38	17	31	26
Little or none (1), (0)	44	78	52	68
		Ward patients		
Great deal (3)	85	43	46	30
Moderate amount (2)	14	54	45	50
Little or none (1), (0)	1	3	9	20

sponsibility at all, and three (3) represented a "great deal" of responsibility. Table 19 combines the ratings of zero (0) and one (1) under the heading of "little or none."

The most striking thing about these figures is the great difference in the amount of responsibility which interns believed they had for ward patients and private patients on all of the major specialties. On internal medicine, for example, 85 per cent of the interns felt that they had a "great deal" of responsibility for ward patients but only 17 per cent felt they had this much responsibility for private patients. As a matter of fact, the percentage who felt that they had "little or no" responsibility for private patients varied from a low of 44 per cent on the medical services to a high of 78 per cent on the obstetrical services.

Although there was some difference among the specialties in the amount of responsibility for private patients reported by interns, a much more striking difference was reported for ward patients. Whereas 85 per cent felt a great deal of responsibility for ward medical patients, only 30 per cent felt that they had a similar degree of responsibility for ward surgical patients. The figures for obstetrics and pediatrics fell in between these two extremes. Attention is called to the fact that 20 per cent of interns felt that they had little or no responsi-

bility for ward surgical patients. (An analysis of the replies to the question of responsibility, by type of internship, is discussed in Chapter VIII.)

#### CHAPTER VII—TEACHING ACTIVITIES

##### 1. NUMBER OF FULL-TIME SENIOR STAFF

The chairmen of the departments of medicine, obstetrics, pediatrics, and surgery in the participating hospitals were asked to provide information about the number of people in their departments who held the rank of instructor and higher and who had geographic or absolute full-time status. In the 25 departments of medicine which responded, the number of such full-time staff members ranged from a low of one to a high of 74, the average being 25. Twenty-one departments of obstetrics and gynecology indicated that they had from zero to eleven full-time staff men, with an average of four. Twenty-seven departments of pediatrics had zero to twenty full-time men, with an average of slightly over seven. Twenty-seven departments of surgery reported a range of zero to 45 full-time men, with an average of fifteen.

Perhaps the most striking thing about these figures is the enormous range from one department to another within a specialty. Presumably, this variation reflects not only the underlying philosophy of medical education of the institutions

involved but also, to some extent, the money available for the support of a full-time staff. Those departments which had few full-time men depended heavily upon their volunteer and part-time staff to do the greater part of their teaching. We made no attempt to correlate the numbers of full-time staff and the apparent success or popularity of a hospital's intern program. The departments in each specialty reporting the largest number of full-time staff were not those with the largest number of interns. Of the departments which reported no full-time staff, two were in obstetrics-gynecology, two in pediatrics, and one in surgery. Three other departments of obstetrics reported only one full-time man.

It was observed that there was a definite relationship between the number of full-time staff and the particular emphasis given to the teaching and research done in a department. There appeared to be little research activity in those departments with few full-time staff. In spite of this, several of these were quite popular with interns and residents, who felt that the teaching was excellent. It was observed, however, that the teaching in these departments was largely of the type referred to as "practical." Such teaching usually dealt with the diagnosis and treatment of the commoner problems encountered, with emphasis on patient management. When questioned about this, both attending staff and house staff pointed out that the majority of those trained in these departments went into private practice; few became teachers or investigators.

## 2. TEACHING ACTIVITIES WITHIN THE DEPARTMENTS

Prior to each hospital visit information concerning the individual programs of the clinical departments was obtained. It was apparent that each department had a character or "flavor" of its own.

This was the result of the special interests of the senior staff and was often reflected in conferences or other teaching sessions which were not common to most other departments of the same specialty. The visits also revealed that conferences of a similar nature had different titles in the various institutions. Hospitals also differed in the composition of the group attending the teaching activities observed. A particular medical conference in one hospital might be attended only by the house staff and attending staff, while in another a similar conference would be attended by students as well. The role of the house staff was not constant from hospital to hospital, even in the regularly scheduled teaching conferences common to all.

The intern questionnaire, therefore, confined itself to those teaching activities likely to be conducted by all departments of most hospitals. These were designated by names which, it was hoped, most interns would recognize. Interns were questioned about only five teaching activities: ward rounds with an attending physician; ward rounds with a resident physician; scheduled teaching conferences attended by both senior staff and house staff; lectures by the attending staff; and "grand rounds" or similar teaching activity directed by the chief of service. The results of these questions are summarized in Table 20.

Interns were asked whether or not they usually attended these activities. Preliminary testing had shown that, when a multiple point scale was provided, most interns checked an intermediate rating, usually designating attendance as "sometimes" or "occasionally." Therefore, in the final questionnaire a choice was forced between "usually attended" and "rarely attended."

From the attendance portion of the table, it is apparent that interns attended the resident's ward rounds more



TABLE 20  
INTERN ATTENDANCE AT REGULARLY SCHEDULED TEACHING ACTIVITIES

	PER CENT "USUALLY ATTENDING"				PER CENT FINDING TEACHING OF CONSIDERABLE VALUE			
	Med.	Obs.	Ped.	Surg.	Med.	Obs.	Ped.	Surg.
Ward rounds with attending physician assigned to your floor	97	63	96	92	82	42	71	66
Ward rounds with the resident on your floor	99	88	98	98	85	49	75	67
Scheduled conferences attended by both house and attending staff	70	60	85	83	81	58	82	73
Lectures by attending staff	48	47	78	61	76	55	82	68
"Grand rounds," "consulting rounds," or similar session directed by the Chief of Service	82	62	86	86	80	55	80	73

consistently than they participated in any other scheduled activity. Ward rounds with the attending physician ranked second, but the percentage of interns on the obstetrical service attending these rounds was substantially smaller than it was on other services. Grand rounds or Chief of Service rounds ranked next in order of regular attendance. Attendance by interns at scheduled conferences within a department ranged from a low of 60 per cent in obstetrics to a high of 85 per cent in pediatrics. Lectures were the activity least likely to be attended on all services.

These figures were further analyzed by type of internship, to determine whether rotating interns were more or less regular than straight interns in attending scheduled teaching activities. In general, there was no difference between the groups. Straight medical interns were somewhat more likely to attend the conferences and lectures of the department of medicine than were rotating interns. On the surgical service, 65 per cent of the rotating interns usually attended lectures given by the staff, whereas only 47 per cent of the straight surgical interns did so.

Whether this reflected the rotating interns' greater interest in lectures on surgery, or a desire to make the most of his limited opportunity to obtain instruction in this specialty, is not known.

The second part of this question asked the interns who did attend these activities to evaluate the teaching at each. The results are shown in the right half of Table 20. Of those attending the teaching activities of the department of medicine, 76-85 per cent felt that each was worth while. The figures for pediatrics are comparable, but those for surgery are slightly lower. Those for the department of obstetrics were distinctly lower than those for any other department. Fewer than half of the interns who attended residents' or attendings' ward rounds on obstetrics found these to be of much value. For the other three activities, including Grand rounds or Chief of Service rounds, only slightly more than half felt that the teaching was of considerable value. Interns found lectures to be the least rewarding of the activities conducted by departments of surgery.

An entirely different section of the questionnaire sought the intern's evalua-

TABLE 21  
 INTERNS' RATING OF TEACHING BY EACH DEPARTMENT  
 A. PER CENT ANSWERING "VERY STIMULATING" (BY TYPE OF INTERNSHIP)

	Medicine	Obstetrics-Gynecology	Pediatrics	Surgery
Rotating	73	26	53	37
Straight medical	74			
Straight pediatric			76	
Straight surgical				46

B. PER CENT ANSWERING "VERY STIMULATING" (BY TYPE OF CAREER PLANNED)

	Medicine		Obstetrics-Gynecology		Pediatrics		Surgery	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
Internal Medicine	236	81	114	15	112	47	116	37
Obstetrics-Gynecology	64	61	60	60	52	50	62	31
Pediatrics	55	75	50	28	97	80	50	30
Surgery	210	72	132	27	139	45	276	46
Psychiatry	69	58	50	20	49	55	46	9
General Practice	71	85	72	28	65	55	62	39

tion of the teaching efforts of the various departments by asking, "How stimulating did you find the teaching by (each) specialty to be?" Results of this question are given in Table 21 (A).

Immediately impressive is the difference between the evaluation placed on the teaching of the department of medicine and that of the other three departments. This result was not surprising to the observers for, as indicated elsewhere, during interviews interns had pointed out a number of factors which they felt favored the teaching by departments of medicine. The picture painted by these figures reflects rather accurately the impressions formed by the committee members.

Since each group of straight interns rated the teaching of its own department more highly than did rotating interns assigned to the specialty, it seemed possible that the more favorable opinion of the departments of medicine might be attributable to a preponderance of rotating interns who planned to engage in family practice or internal medicine. The breakdown by type of career planned is shown in Table 21 (B) and reveals that, on the contrary, regardless of the field of practice chosen, internal medicine received the highest rating, except by those, planning to practice pediatrics,

who rated pediatrics highest. These figures are impressive, especially when stated negatively, for they indicate that a majority of the interns spending time on obstetrics-gynecology and surgery felt that the teaching in these departments was not very stimulating. Almost half the respondents felt this way about the teaching in pediatrics.

Interns were quite bitter about this state of affairs, and with some justification. The study director observed that a number of departments were not organized so as to bring the intern into close contact with the senior staff. Some departmental staffs apparently had no clear concept of what the intern's place was, what he should get out of the service, or what the service was actually offering him. Others, in effect, seemed to have little interest in him except as someone to perform certain routine tasks.

In summarizing his experience in obstetrics and gynecology, one intern said approximately this: "The attending physicians on this service have little to do with the intern. Here it is the residents who do the teaching, and they vary greatly. On gynecology, the intern is responsible for the nursing chores; that is, he sees that the enemas are given, that the patient gets the proper diet, and that pre-operative medications are

given. He gets no experience in the operating room and has no post-operative responsibilities whatsoever." Another put it this way, "Gynecology at this hospital puts together all of the poor points of a private patient internship."

The general impression of surgical services was only slightly better, though considerable variation was encountered. Some departments were impressive for the quality of attending rounds, resident rounds, and conferences, as observed during the hospital visits. In contrast to these, several surgical services seemed to be too busy to devote much time to house staff teaching. On many of these services, interns and residents competed with each other for worth while duties, including patient responsibility and the initiation of orders. Much of the actual teaching focused on the technical aspects of surgical treatment rather than on the nature of the illnesses being treated. A number of senior staff members in surgery spoke of the large amount of routine work done by interns on their services. Whereas many felt that this was necessary, they were somewhat apologetic about it and indicated that an attempt was made to repay the intern for all chores by allowing him to perform a few procedures, such as an occasional appendectomy or herniorrhaphy.<sup>7</sup>

<sup>7</sup>In the course of an interview with interns at one large general hospital, the committee members were impressed with the favorable report given by one of the group concerning his experience on the surgical service, because it contradicted much that had been seen and heard of this service. The intern indicated that he was allowed to perform a larger than usual number of surgical procedures, and that he was very grateful for this experience. The residents of this service were asked how this had happened. The chief resident intimated that he had made it possible for this intern to do these things, because he was especially conscientious and seemed interested in surgery. A look of utter consternation came over the resident's face when he was told that this intern was going into psychiatry.

TABLE 22

ACTIVITY	No. OF TIMES PER WEEK PERFORMED		
	0	1-5	More than 5
First assistant at major operation	7%	83%	10%
Held retractors only	1	48	51
Closed incision	2	73	25
Sutured laceration (in E. R.)	4	27	69
Changed dressing on post-operative patient	....	17	83
Removed sutures from post-operative patient	4	96	....

Because of the general dissatisfaction with the role of the intern in surgery, part of the questionnaire was designed to identify specific reasons for the existence of this problem. Activities which straight surgical and rotating interns on surgery are likely to carry out were listed, and the intern was requested to indicate the number of times per week he had performed each one. Replies to this question are shown in Table 22.

These reflect the variable experience of the intern on surgery. While 10 per cent had the role of first assistant more than 5 times per week, 7 per cent had never had this experience. Half the men had spent considerable time in the operating room holding retractors. Virtually all had changed many dressings, but 4 per cent indicated that they had never removed sutures postoperatively. In general, the reaction to the surgical experience was that interns spend too much time starting intravenous infusions, changing dressings, holding retractors, and doing "routine admission work-ups." Analysis by type of internship revealed that there was no essential difference between the experience of rotating interns and straight surgical interns as to the frequency with which they performed these procedures or in the degree of satisfaction derived from them.

TABLE 23  
A. SURGICAL EXPERIENCE\*

DISORDER: No. Patients	DIABETES		SHOCK		UNDIAGNOSED		GASTROINTESTINAL BLEEDING		INTESTINAL OBSTRUCTION	
	0	3 or more	0	3 or more	0	3 or more	0	3 or more	0	3 or more
Rotating intern	40	27	9	64	14	70	32	44	20	51
Straight surgical intern	14	62	2	89	6	80	15	62	12	76

B. PER CENT PERFORMING ONE OR MORE OPERATIONS OF EACH TYPE

	Herniorrhaphy	Appendectomy	Cholecystectomy	Tracheostomy	Tonsillectomy & Adenoidectomy
Rotating intern	49	59	1	58	27
Straight surgical intern	64	72	11	75	33

\* Figures = % of replies.

A second question asked how many times interns had had a major role in caring for certain types of patients while on the surgical service. They were also asked how many times each had performed certain operations. The response to these questions is shown in Table 23. Forty per cent of rotating interns and 14 per cent of straight surgical interns had not had a major role in managing a diabetic patient undergoing surgery. For each of the situations listed, the percentage of straight interns who failed to have such experience was less than half that for the rotating interns. Conversely, a larger percentage of straight interns had managed three or more patients in each category. Obviously, the length of time spent on the service was an important factor in producing this difference, but the figures do offer one basis for comparing the experiences of the two groups.

Table 23 (B) compares the number of operations performed by the two intern groups. Again the experience of the straight group was more extensive. It may be of interest to some to learn that the percentage of rotating interns who performed major surgery was this large. All chiefs of surgery who were interviewed agreed that performing oper-

ations was the least important aspect of an intern's experience on the surgical service, and that at this level of learning it was not a major goal of the departments to provide such opportunities.

### 3. PSYCHIATRY

Evaluation of the teaching activities conducted primarily for the house staff could not be studied as systematically in departments of psychiatry as in other specialties, because of the organization of both teaching and patient care on psychiatric services. Furthermore, there was much less consistency in assigning rotating interns to a period on psychiatry. Table 24 indicates that for 36 per cent of the respondents such an assignment was an elective. For a few of the remaining 64 per cent it was compulsory, but for the majority it was not available at all. While 86 per cent of the interns said that their hospital had an outpatient psychiatric clinic, only 17 per cent indicated that they had an opportunity to work there. It was of interest that 63 per cent of the respondents felt that all interns should have the opportunity to elect an assignment on psychiatry.

A few questions were asked of interns regarding the teaching activities on

TABLE 24  
INTERN ASSIGNMENT ON PSYCHIATRY

	Yes	No	No Response
Does your internship include an in-patient assignment on psychiatry?	35%	64%	1%
Is this an elective assignment?	36	49	15
Does your hospital have a psychiatric out-patient clinic?	86	11	3
Does the intern have an opportunity to work in this clinic?	17	75	8
Do you think it would be a good idea to offer <i>all interns</i> the opportunity to elect an assignment on psychiatry?	63	34	3

psychiatry. The results are shown in Table 25. From the response it is apparent that teaching methods on psychiatry vary somewhat from those of other services. Approximately 70-80 per cent of the respondents found that the teaching of psychiatry in the manner specified by the questionnaire was satisfactory.

It was interesting to learn that an unpublished study of one 2-year rotating internship program covering a period of several years, in which psychiatry was a required assignment, revealed that these interns found the teaching on psychiatry to be approximately equal to that of the medical service. However, the minimum assignment on this service was 4 months.

#### 4. FACTORS AFFECTING THE ATTITUDE OF THE INTERN TOWARD TEACHING:

*Attitude of the senior staff and resident staff toward the intern.*—Although this point has been mentioned earlier, it is pertinent to speak of it again in this context. Some physicians fail to realize how enormously different are the attitudes of the senior staff toward interns in different hospitals. To discover this requires only a visit to a small number of hospitals. Even within one hospital, the attitude toward the rotating intern may vary greatly among departments. On some, he is more tolerated

than wanted, but nevertheless necessary to get the work done. On others, the tendency is to err in the opposite direction and give the intern so much independence that he is sometimes charged with assuming responsibilities and making decisions which may overtax his ability. Such situations may only accentuate a man's sense of inadequacy and frustration.

Whatever the appropriate attitude, it can be developed only if the program permits the senior staff of each department to know the interns as individuals, thereby determining what method of teaching will be most effective for each. Some interns need to be urged, or forced, to assume a more aggressive role, while others must be restrained from attempting too much. Those programs which were most successful in bringing out the best of the intern-senior staff relationship had in common a genuine interest in the interns, an understanding of their proper role on the service, and a willingness to teach them.

*Conflict of interests.*—One of the common frustrations of interns grew out of the fact that some assignments and responsibilities resulted in serious conflicts of interest. On the one hand, they might be asked to render an enormous amount of individual patient care and, on the other, called to account for not

TABLE 25  
TEACHING ACTIVITIES OF PSYCHIATRY SERVICES

Activity	Per cent reporting activity available	PER CENT FINDING THE ACTIVITY:	
		"Of much value"	"Of little value"
Rounds with attending psychiatrists	75	57	18
Rounds with psychiatry residents	70	36	34
Scheduled departmental conferences	82	52	30
Observing psychiatrist working with individual patients	57	36	21
Having opportunity to go into patient's problem, then discussing it with resident and senior staff	84	64	20

attending formal teaching activities when, in fact, it was virtually impossible to do both. This was particularly true of the busier services.

The study observers cannot agree, as has been charged by some, that today's interns are "lazier" than those of an earlier generation. While it is true that many are married and have distracting family responsibilities, and the attitude of some reflects the general trend of our society to a shorter work week, the happiest and most satisfied interns encountered in the study were often the busiest. More interns complained about poor organization, which prevented them from profiting from the experience which might have been theirs, than complained about overwork.

The following schedule of an actual working day of one surgical intern in the study illustrates the problem. While it applies primarily to one hospital, we were able to confirm the fact that it is not unique but is fairly typical of the schedule of all interns on busy surgical services.<sup>8</sup>

5:30-6:30 A.M.—dress, have breakfast.

<sup>8</sup> For an interesting analysis of the way some straight medical interns spend their time, see reference 5, by Payson *et al.*

6:30-8:00 A.M.—see all patients on the ward, draw blood for lab., start I.V's, write orders for the day.

8:00-(12-2:00) P.M.—in operating room except for occasional emergency calls to ward.

12:00-1:00 P.M.—lunch.

1:00-2:30 P.M.—floor rounds with resident, change dressings, remove sutures, etc.

2:30-8 or 10:00 P.M.—postoperative duties with patients returning from recovery room; work-up two to five new patients and write routine pre-operative orders on them; fill out requisitions, complete charts; be sure that all necessary lab. tests, x-rays, etc., have been reported on patients for next morning's surgery.

5:00 or 6:00 P.M. (certain days)—rounds with chief resident or staff man.

10:00 P.M.—5:30 A.M.—on duty at least every other night, frequently up greater part of these nights.

It was difficult to see where such a schedule provided for reading of any kind; time to hold a discussion of anything other than the immediate problems of the service with either residents or attending staff; a chance to think; adequate physical rest or mental relaxation. It was certainly no surprise that mor-



ale of the interns on this service was low and their opinion of the interest of the staff in their education, equally low.

*Preparation of scheduled teaching activities.*—In the course of the study, the staff was privileged to attend the conferences of many departments. Some provided choice intellectual fare, whereas others were masterpieces of mediocrity. The latter often appeared to result from inadequate planning and presented speakers whose discussion revealed little preparation. Most physician-teachers carry with them a certain body of knowledge which is adequate for understanding and treating the commoner disease processes. However, unhappy experience indicates that few are capable of presenting an erudite and stimulating discussion of many topics on short notice.

Conferences based upon patients selected for discussion only a few hours earlier are likely to seem dull, repetitious, and uninspiring to all, including the interns. Interns and residents said that they derived a greater sense of satisfaction from attending one well prepared conference per week than from sitting through several which did not add significantly to their knowledge or understanding. For this reason, it may be wise for each department to review its weekly schedule and to reduce the hours of formal teaching to that number which the staff can comfortably carry and to which it can devote sufficient time.

*Opportunity to participate.*—Very few departments offered the intern much opportunity to participate in teaching exercises. Most of them did call upon him to present the case history of the patient about whom the discussion centered. Most interns liked this experience, because it gave them an opportunity to organize their thoughts

about a particular patient and to learn to present the essential details of an illness in a clear, concise manner. Beyond this, the intern had relatively little opportunity to participate in discussion groups or to learn to speak before his colleagues. Similarly, only a few departments offered him any formal opportunity for review of even the most recent medical literature pertaining to the patients under his care. Those which had journal clubs usually organized them about the resident staff, and interns seldom participated even if they were invited to attend. Aside from keeping charts of his patients, the intern had essentially no opportunity to learn anything about medical writing. Even his notes on charts often consisted of a series of uninterpretable abbreviations, the writing of which served only to promote slovenly habits.<sup>9</sup>

#### 5. DEPARTMENTAL OBJECTIVE FOR INTERNS

Perhaps the most difficult request made of a departmental chairman was that he state, concisely and specifically, his goals for furthering the education of interns. A few of the replies are cited in the sections that follow. These were selected because they are representative of the thinking behind some of the programs. In some instances, the methods by which the departments sought to achieve these goals are specified.

*Departments of medicine.*—One professor of medicine outlined the goals of his department in the following manner:

Assuming that an appropriate number of patients having a suitable variety of pathologic processes is available to each intern, then the specific goals become: 1. the

<sup>9</sup>One large hospital whose interns participated in the study does make available to interns, residents, and senior staff members, a course in medical writing as well as free editorial services.

opportunity to assume responsibility; 2. the opportunity to learn procedures; 3. the opportunity to learn to deal with people (patients, their families, other physicians); and 4. the opportunity to gain some measure of medical maturity.

Another expressed himself, with regard to the science of medicine, along these lines:

"We must get across to the house staff that what a man learned in medical school is not irrelevant to medical practice." This, he emphasized, is the essence of sound medical practice and has top priority in a university hospital program. At the same time, he said, it is extremely important that we do not become so laboratory oriented in our university hospitals that we fail to develop the physician's ability to deal with patients as fellow humans.

A third professor looks upon the third-year clinical clerkship as a period for acquiring a large volume of new information. In the fourth year, the student may acquire much less new knowledge, but he examines that previously learned more critically, making it genuinely his by learning how to use it. The intern year then becomes the "doing year," in which a man, through exposure to a larger number of patients, learns efficiency in dealing with the sick and develops the "clinical reflexes" which enable him to select wisely from his store of knowledge that portion which has a bearing on the patient before him.

Although stated in a number of ways, a recurring theme of the philosophies expressed was the idea that it is a mistake to consider the internship as separate and apart from the residency experience. Since 93 per cent of the respondents said that they planned to take residency training, the value of the internship as an educational experience can be increased by planning it in such as way as to build upon the experience each man had as a student and to provide

a gradual transition to the role of the resident.

Several programs which offered both straight and rotating internships in the same hospital were studied. On the medical services, the goals for both groups of interns were stated to be the same. The limiting factor for the rotating intern was the length of time spent on the service. One departmental chairman pointed out that the rotating intern on his service spent 3 months on the general medical wards and said, "Many times I forget which intern is straight and which is rotating." The duties and responsibilities of both groups of interns in such departments were the same, as were their relationships to the residents. There were, of course, significant differences in the type of assignments. Because of the desire to provide interns with the opportunity to see the greatest possible variety of diseases in a short period of time, rotating interns, in some instances, had shorter assignments on each of several medical wards than would straight interns.

*Obstetrics.*—The chairman of one department of obstetrics outlined the goals for interns in his department in the following terms: "To expose a man to a broad base of primary and secondary obstetrical and gynecological pathology, and to acquaint him with the proper surgical procedure for handling these problems." This exposure, he felt, gave all interns a keener appreciation of the needs of those patients who had either an obstetrical or a gynecological problem and a simultaneous medical illness. Since this hospital offered only rotating internships, he felt that such experience would be valuable to all interns, regardless of their eventual choice of a field of practice.

The goal of another department was "To develop a scientific approach to pregnancy, gestation, and delivery." In this

department, research was concerned with such problems as premature labor and delivery, stillbirth, and the mortality rate in the early neo-natal period. Because of this it was felt that during his assignment to this department every intern should have the opportunity to become aware of some of the problems that challenge obstetricians to know more than just the technical side of their specialty.

The staff of another department indicated that a substantial number of their interns eventually went into general practice. The chairman was asked to outline his objectives for such a man. He outlined the goals of the intern's experience in gynecology as providing the opportunity to: (a) improve diagnostic ability by learning to do pelvic examinations, cervical biopsies, etc.; (b) learn the treatment of the commoner disorders; (c) become familiar with the adequacy of treatment that is available for more serious disease; (d) learn something of endocrinological problems. During the intern's experience in obstetrics, he should learn: (a) how to deal with concomitant medical problems during pregnancy; (b) how to treat toxemia of pregnancy; (c) the nutritional requirements of the pregnant woman; (d) how to evaluate the pelvic capacity for delivery; (e) how to do normal deliveries with a minimum of damage to the perineum; (f) what constitutes adequate post-partum care. When asked if he felt a rotating intern could hope to learn all this during the 3 months on his service, the chairman replied, "Yes, he can, because of the volume of patients here and the interest of our staff in teaching."

Many staff members in obstetrics and gynecology were concerned by the apparent lack of interest in this field shown by interns. Several agreed with the remark of one departmental chairman,

who said, "If we are going to attract more people of exceptional talent into the field of obstetrics and gynecology, we are going to have to emphasize more than the technical aspects of the field." Ironically, this noble philosophy was expressed by a man whose department was one of the most unpopular with interns questioned during the entire study. Subsequent discussion revealed that he had little personal contact with interns. As a consequence a deplorable lack of communication had developed within the department. Illustrative of this was the fact that, although it was permissible for interns to spend their assignment to gynecology in the out-patient department, they were apparently unaware that such an arrangement was possible. Perhaps partly as a result of the general dissatisfaction with the role of the interns in this department, none of the first-year residents of the 2 previous years had come from the hospital's own intern group.

As to the purely technical aspects of obstetrics, the interns' experiences varied enormously. Those municipal hospitals with large public patient services provided their men with a vast delivery room experience. Other hospitals with a larger number of private patients, or a more restrictive admission policy, provided ten to 25 deliveries for each rotating intern. Senior staff members agreed that an intern should do enough deliveries to feel competent in handling uncomplicated cases but that it was a mistake to emphasize this aspect of obstetrics to the exclusion of all else. In spite of this belief, in at least two hospitals the intern worked primarily in the delivery room, where the load was so great that it was said to be impossible for him to see his patients in the post-partum period. Although the chairmen of these departments did not approve of this, it was a situation which had de-

veloped out of expediency. Interns and residents alike felt that this was deplorable in terms of graduate medical education.

*Pediatrics.*—There was considerably less agreement among pediatricians as to the goals of intern training in pediatrics than there was for internists about the goals of their specialty. One of the more traditional points of view was held by a department which sought to provide its rotating interns with the opportunity to: (a) learn not to be afraid of the sick child; (b) learn methods of pediatric diagnosis and treatment; (c) learn to take responsibility; (d) participate in teaching medical students; (e) spend time in a special laboratory, if desired. However, to achieve this, it was stated, would take a minimum of 4-6 months, which was more time than that internship provided for pediatrics.

A number of pediatricians were rather concerned about the great differences between the type of practice seen in a busy university hospital service and in a busy office-home practice. Some staff members see this as posing the following specific problems: (a) The practicing pediatrician finds it increasingly difficult to be an effective attending physician on the university in-patient service. (b) This, in turn, increases the need for a highly specialized full-time staff of pediatricians to supervise the hospital services and to teach. (c) Interns and residents get an incomplete training in the overall field of pediatrics if they have largely an in-patient experience. One full-time chief of pediatrics illustrated the point by recalling that the busiest practicing pediatrician on his voluntary staff admitted only five patients a month to the hospital.

The chairman of a department offering only straight pediatric internships pointed out that on his very busy outpatient services, he could offer excellent

experience to a number of rotating interns who wanted some pediatric training for general practice. He believed that the teaching potential of this service was not being exploited to its maximum, because the relatively smaller in-patient services limited the number of straight interns he could appoint.

The chairman of another service offering only straight pediatric internships suggested as a somewhat unorthodox solution to some aspects of the situation that it might be better if "specialists" in internal medicine and pediatrics became essentially consultants in these fields and confined themselves largely to hospital practice. To meet community needs, there would be developed a family practitioner with several years of training in the treatment of the nonsurgical illnesses of patients of all ages. Similar ideas have been expressed by others and are referred to here because any steps in this direction would have a profound effect on intern programs, particularly in pediatrics.

*Surgery.*—The major intent of surgical services was repeatedly stated to be one of orienting interns to the general nature of those diseases and injuries which are amenable to surgical treatment, acquainting them with the potentialities and limitations of surgery as a method of therapy and giving them first-hand experience with the pre-operative and post-operative care of patients undergoing surgery. The emphasis on permitting the intern to develop some technical proficiency varied from very little to moderate.

The goals of one department having only rotating interns were to teach the intern "those procedures, in dealing with acute surgical problems, which permit him to save life and limb and prevent infection." The experience, it was added, should enable a man to

recognize the nature of a situation and to perform such emergency procedures as tracheostomies while getting the patient to a competent surgeon. The value to the intern of having to "scrub in" on a number of operations, according to the chairman, was that "he must become at home in rubber gloves."

Another department had its rotating interns spend a large part of their time in the surgical out-patient department in an attempt to prevent duplication of experiences they had had as clinical clerks. The chairman of a department having both rotating and straight surgical interns said his goals for the two groups were the same, but that the great difference between them as to what they got from the service was attributable to the shorter time the rotating interns spent on surgery. His goals were to provide: (a) heavy exposure to general surgical problems, emphasizing particularly, diagnosis and management; (b) a fairly extensive knowledge of acute surgical problems; (c) an opportunity to become familiar with minor surgical procedures and to develop a facility for doing them.

The considerable difference of opinion regarding the value of holding retractors—known in the intern's vernacular as "hooks" or "idiot sticks"—is illustrated by the policies of two departments having straight internships. One of these had its interns scrub only on emergency cases (usually four or five times per week). An intern from the other service had scrubbed on "about 800" operations.

It would seem that, while there was considerable agreement amongst surgeons as to what benefits they intended interns to reap from their assignment to surgical services, there was much disagreement—even confusion—as to how this could be successfully brought about. The high ideas and laudable

goals appeared to run aground on the shoals of uninterested teaching, obsession with the technical, and long-standing traditions of regimentation.

## CHAPTER VIII—COMPARISON OF ROTATING AND STRAIGHT INTERNSHIPS

### 1. GENERAL DESCRIPTIONS

Representative examples of the assignment schedule of rotating internships are shown in Table 26. The twelve programs listed were chosen to illustrate their range. Although other schedules were offered, they did not differ greatly from the examples given.

From Table 26, it is evident that all rotating internships have in common the fact that they offer a multi-disciplinary experience. Beyond this, they differ greatly in the emphasis placed upon each specialty and in the number and length of assignments. Basically, all programs are organized around a central core of general medicine, general surgery, obstetrics, and pediatrics. In addition, each hospital has its own plan for including the subspecialties.

As noted earlier, one hospital may offer a choice of several rotations, each with a slightly different emphasis, while another will have only one rigid, lockstep rotation for all interns. Not all of the hospitals offering more than one rotation allow the interns to select their programs. Some assign men arbitrarily to a particular schedule, but then permit interns who are particularly interested in a subspecialty to trade assignments of equal length with their fellows. In others, no such exchanges are permitted once the schedule has been published.

Detailed schedules of straight internships have not been included. All of these offer several months' experience on the general wards of the specialty. As in the rotating internship, the remainder of the year is composed

TABLE 26  
SCHEDULES OF ROTATING INTERNSHIPS  
(Weeks of Assignment)

No.	GEN. MED.	GEN. SURG.	Obs.-GYN.	PED.	E. R.	ELEC.	ORTH.	OTHER	
1.	13	13	5	4	5	2	4	Lab., 4	Anes., 2
2.	16	8	5	4	8	4		Urol., 4	Psych., 4
3.	13	9	8		13	9			
4.	9	18	8		9	8			
5.	12	12	4	4	8	4	4	Psych., 4	
6.	15	9	5	3	3	10	2	Anes., 2	
7.	13	9	8	4	9	9			
8.	9	3	6	3	6		3	Med. Sub., 3-3-3	Misc., 3
9.	12	6	3	3	6		6	ENT, 3; Med. Sub., 3-3	Misc., 3
10.	18*	18*	4	4	4				
11.	13*	13*	4	4	9	9			
12.†	11	11	4	3	7		4	Derm., 4	Neur., 4

\* Time includes subspecialties.

† Plan has fourteen assignments of 26 days each.

Gen. Med.—General medicine  
Gen. Surg.—General surgery  
Obs.—Obstetrics  
Gyn.—Gynecology  
Ped.—Pediatrics  
E. R.—Emergency Room  
Elec.—Elective  
Orth.—Orthopedics  
Lab.—Laboratory

Anes.—Anesthesiology  
Urol.—Urology  
Psych.—Psychiatry  
Med. Sub.—Medical subspecialties  
ENT—Otolaryngology  
Misc.—Miscellaneous  
Derm.—Dermatology  
Neur.—Neurology

of a variable number of assignments to other areas within the department. These depend on the interests and the organization of the individual departments. These programs are also apt to be quite rigid in design, requiring all interns to follow the same rotation of assignments. The philosophy behind this policy is that all men going into a certain specialty need a common background of information and experience. Since most of them will continue to study in the specialty, it is believed that ample opportunity for obtaining subspecialty training is provided during the residency. An inflexible program for the straight interns of all specialties may introduce potential defects, however. For example, the point is made elsewhere that 42 per cent of those taking straight medical internships plan careers in other branches of medicine. It is not inconceivable that the needs of some of these men

might be better met by a program which varied from the general pattern.

All straight internships within a specialty are by no means alike. Some include out-patient assignments, others do not. Assignments to a laboratory are included in some, omitted in others. A few include time in a related specialty. For example, straight medical interns may spend 4-8 weeks in pediatrics and vice versa. The nature of a straight intern's emergency department assignment varies from seeing a pre-selected group of patients to seeing all patients, regardless of age, sex, or complaint, who come in during his hours of duty. Under these conditions, a medical intern would not necessarily care for the surgical or pediatric patients he saw in the emergency room, but would make the initial evaluation, thus having an opportunity to become somewhat familiar with acute problems of other specialties as well as his own.



Some programs enable the intern to work with both ward and private patients, whereas others confine an intern to one group or the other throughout the year. Only one program observed had a separate house staff for its public and private patients. Consequently, no conclusions can be drawn concerning the wisdom of this policy. Most of those working solely with public patients in this hospital did not look on the private service with favor. On the other hand, many of the house staff of other hospitals had occasion to express their feelings on this point, and a number of those working exclusively with the public patients in a municipal hospital felt that their program also had distinct disadvantages. It was the consensus of both the senior staff and house staff interviewed that the most desirable program for both internship and residency would include assignments on both public and private wards, thereby giving the house staff the opportunity to work with people of all economic groups and various social backgrounds.

In all programs—straight, mixed, and rotating—assignments are determined to some extent by the necessity for providing service to patients and staff. This is commonly referred to as "coverage." Such a practice need not be an evil, since, although it may be essential that the hospital "cover" a general medical ward at all times, it is also highly desirable from the point of view of the straight medical and rotating interns to have such an assignment. Coverage becomes insufficient reason for including an assignment only when the rewards of the experience do not justify the time and work involved. Not only are interns quick to discover which assignments fall into this category, but if any program includes many of them intern morale

TABLE 27  
PER CENT INTERNS WHO FELT ASSIGNMENTS  
DETERMINED PRIMARILY BY NEED TO  
PROVIDE SERVICE

Internship	Medicine	Obstetrics	Pediatrics	Surgery
Rotating	58	66	54	60
Straight medical	46			
Straight pediatric			49	
Straight surgery				63

suffers, and, as a consequence, both patient care and intern education are adversely affected. Table 27 shows what percentage of interns felt their assignments were determined primarily by the need to provide service to patients.

Straight medical interns were somewhat less likely than rotating interns on medicine to feel that their assignments were primarily for service. For pediatrics and surgery, the differences between the rotating and straight groups were small. Of significance, however, is the fact that more than half the interns in this study felt that the necessity to provide service was a more important factor in determining their assignments on all specialties than was a concern for the educational opportunities provided the intern. This indictment is not softened by the fact that more rotating interns felt this way than did the straight interns.

## 2. SPECIFIC COMPARISONS

*Duties.*—Regardless of the type of internship being followed, the duties of all interns working in a particular specialty were similar. Analysis of the data by type of internship revealed that the amount and nature of contact with patients were nearly identical for straight and rotating interns, although the former were somewhat more likely to initiate orders, request consultations, talk with the families of patients, and

TABLE 28  
PATIENT RESPONSIBILITY BY TYPE OF INTERNSHIP

TYPE OF INTERNSHIP	MEDICINE		OBSTETRICS		PEDIATRICS		SURGERY	
	"Little or none"	"A great deal"	"Little or none"	"A great deal"	"Little or none"	"A great deal"	"Little or none"	"A great deal"
	Private patients							
Rotating	55	16	89	5	58	15	74	6
Straight medical	32	20						
Straight pediatric					17	30		
Straight surgical							51	11
	Ward patients							
Rotating	1	86	15	45	10	43	21	30
Straight medical	1	80						
Straight pediatric					0	76		
Straight surgical							11	36

decide when a patient was ready for discharge from the hospital. Each of these duties involved the exercise of judgment and the assumption of a certain amount of responsibility. In changing assignments, the rotating intern might be less likely to take the initiative in such matters when first coming on a service, but, insofar as he was capable of doing so, he was expected to carry out the same functions as the straight intern.

*Responsibility and authority.*—The data presented in Table 19 were analyzed by type of internship, and the results are shown in Table 28. More than half the rotating interns felt that they had "little or no" responsibility for the private patients of any specialty, and, for private surgical and obstetrical patients, this figure reached 74 per cent and 89 per cent, respectively. Significantly fewer of the straight interns in each specialty felt so little responsibility for private patients, although 51 per cent of those in surgery did so. Only 16 per cent of rotating and 20 per cent of straight medical interns felt "a great deal" of responsibility for private patients, while corresponding figures for pediatrics were 15 per cent and 30 per cent, and for surgery 6 per cent and 11 per cent. It is, therefore, quite apparent that

whatever impression the senior staff may have had about this matter, interns of all groups believed that they bore, at best, only a moderate amount of responsibility for private patients and, by comparison, rotating interns felt distinctly less responsibility for the private patients of each specialty than did the straight interns.

The intern is often referred to as the "ward patient's doctor." The figures shown in the lower portion of Table 28 do not uniformly support this assumption. On the medical service, the vast majority of both rotating and straight interns did indeed feel a great deal of responsibility for ward patients. This was also true for 76 per cent of straight pediatric interns. However, *less than half* the rotating interns reported having a great deal of responsibility for ward patients on obstetrics, pediatrics, or surgery. Of straight surgical interns, only 36 per cent felt a great deal of responsibility for ward patients. This appraisal by the interns agreed well with the impression of the observers, that medical services in general gave rotating interns significantly more patient responsibility than other services, and that, for the other three specialties, the experience of the majority of rotating interns was less than satisfactory in terms of patient responsibility.

TABLE 29  
PER CENT INTERNS ANSWERING "YES"  
TO THE QUESTIONS ASKED

	Medicine	Obstetrics	Pediatrics	Surgery
Is this specialty known as a "students' service?"	17	23	11	7
Is it known as a "residents' service?"	25	50	45	77

Because of this observation, an attempt was made to determine the orientation of the various specialties by asking interns whether each service was known as a "students' service" or a "residents' service." The replies to these questions are shown in Table 29 and indicate that very few interns found any service to be primarily student-oriented. In contrast to this, however, 77 per cent felt that their surgical services were "residents' services," and for obstetrics and pediatrics the figures were 50 per cent and 45 per cent respectively. These figures agree well with the observers' impression that residents dominated most surgical services. The figure of 50 per cent for obstetrical services may be low, owing to the fact that several very busy services had fewer residents than they needed, and on these the intern's role more nearly resembled that of the resident. It was the impression of the observers that in those obstetrical services which had a full complement of residents, the intern-resident relationship resembled that of surgical services.

*Learning opportunities.*—In view of the importance of the resident in determining the nature and frequency of the intern's learning opportunities on each service, the data pertaining to the relationship between the two was studied by type of internship. The replies to two questions are shown in Tables 30 and 31. Most of the residents on the medical services rated well as teachers with 76 per cent of rotating and 87 per cent of straight medical in-

terns, but the percentage of rotating interns who felt that only half the medical residents were capable and willing teachers was twice as large as that for straight medical interns. Pediatric residents rated about the same with both rotating and straight interns, but a slightly higher percentage of straight surgical interns rated more of the surgical residents as good teachers than did the rotating group.

Although the resident may be a capable and willing teacher, the time available for this endeavor may be significantly reduced by the amount of menial labor interns must perform. (Since most interns identified such duties as "scut work," this term was used in the questionnaire, although we question the good taste of doing so.) Table 31 indicates the extent to which interns felt exploited by residents. Three points are striking: (a) Again, the medical services were indicted by the smallest number of both groups. (b) For each specialty, straight interns felt less exploited by residents than did the rotating group. (c) The percentage of rotating interns who felt that half or more of obstetrical and surgical residents were *primarily* concerned with the amount of work they could get the intern to do, was appallingly high (41 per cent and 54 per cent, respectively).

Earlier reference has been made to certain of the intern's learning opportunities. In discussing the data in Table 22, it was pointed out that the duties of rotating and straight surgical interns were similar. On the other hand, the

TABLE 30

Q. "How many residents were capable of teaching you and willing to do so?"

TYPE OF INTERNSHIP	MEDICINE Most—about $\frac{1}{2}$ (per cent)		OBSTETRICS Most—about $\frac{1}{2}$ (per cent)		PEDIATRICS Most—about $\frac{1}{2}$ (per cent)		SURGERY Most—about $\frac{1}{2}$ (per cent)	
Rotating	76	20	60	27	68	23	58	30
Straight medical	87	10						
Straight pediatric					70	21		
Straight surgical							66	25

TABLE 31

Q. "How many residents treated you as someone primarily to do their 'scut' work?"

TYPE OF INTERNSHIP	MEDICINE Most—about $\frac{1}{2}$ (per cent)		OBSTETRICS Most—about $\frac{1}{2}$ (per cent)		SURGERY Most—about $\frac{1}{2}$ (per cent)		PEDIATRICS Most—about $\frac{1}{2}$ (per cent)	
Rotating	5	12	20	21	10	20	24	30
Straight medical	1	7						
Straight pediatric					0	5		
Straight surgical							15	21

greater length of time he spent on surgery enabled the straight intern to see a greater variety and number of patients undergoing surgery than the rotating intern (Table 23).

Since none of the internships studied were classified as straight obstetrics and gynecology, for purposes of this discussion only rotating interns are considered to have had an opportunity to learn more of obstetrics. Essentially the same can be said of gynecology, although both straight medical and straight surgical interns undoubtedly had some contact with gynecological problems. Nevertheless, it was the impression of the observers, that, in general, the potential for teaching gynecology was hardly touched in any rotating internship. Similarly, the gynecological services provided a considerable potential for the study of concomitant medical problems in gynecological patients and this, too, was largely ignored. On one occasion the study director attended gynecological rounds during which time some ten patients were seen, each having a non-gynecological medical problem. Inquiry at other hospitals revealed that this situation was not unique, but rarely was any effort made to take advantage of this op-

portunity for the benefit of the interns of the service.

*Length of assignments.*—Specific assignments have already been discussed. On the average, rotating programs had more assignments than straight programs, although certain surgical programs included about the same number. Whereas 4-week assignments were common to all internships, 2- and 3-week assignments were much more common in rotating plans. Conversely, while 6- and 8-week tours of duty were common in straight programs, they were rarer in rotating programs. Related to this situation was the fact that rotating interns spend at best only one-fourth to one-half as much time on any specialty as the straight interns.

The shorter total time on a service and the fragmentation of assignments has several effects: (a) The attitude of the senior staff may be affected. Some of the opinions expressed on this point revealed that rotations are so brief that interns cannot become familiar with the service; staff and interns do not have time to get to know each other; teaching tends to become superficial and repetitious; such brief exposure on a service adds little to what was experienced as a

clinical clerk; interns cannot be given much responsibility in so short a time; rotating interns receive inadequate training in all specialties. (b) The rotating intern is more subject to exploitation by residents. If a resident does not know an intern's abilities, he may simply assign him to perform chores rather than risk giving him responsibility. (c) The intern may feel strongly his lack of identification with any one department. This, in turn, may lower his morale and his level of performance.

*Goals and objectives.*—The educational objectives of internship programs in various departments have been compared earlier in this report. These, it was noted, were essentially the same in principle for both groups, but more limited in scope for the rotating intern because of his shorter affiliation with each service. When examined by type of internship offered, the long-range goals of the departments assumed different aspects.

The general philosophy behind rotating programs was usually expressed as an attempt to accomplish one or more of the following:

1. to give a man a "broad base of experience" in all fields of medicine prior to entering general practice;
2. to provide a similar broad base of experience prior to specialization;
3. to enable men whose plans have not crystallized to select their field of major interest;
4. to provide a better understanding and appreciation of other fields of medicine than would be possible if specialization were to begin at the intern level;
5. to give all physicians some facility in those minor technical procedures which they may be called upon to perform in an emergency.

Straight internships were designed with different goals in mind. These were said to be combinations of the following:

1. to provide education and training in

depth, in a single specialty and its related subspecialties, as the first of several years of graduate study;

2. to offer more extensive experience in one field prior to specialization in another (e.g., straight medical internship prior to surgical or other residency);

3. to provide early specialization for those who have already selected a field for practice, research or academic medicine.

It is fair to state that some of those who advocate rotating internships for all physicians do so because they believe that it is a function of the university hospital to provide graduate education for those going into general practice, and because they feel that a straight internship is too narrow an experience for these individuals even when followed by 1 or more years in another field. However, it was also apparent that many of those who state categorically that all internships should be rotating do so because they have had no personal experience with any other type of program or because they have been slow to recognize some of the limitations of rotating internships pointed out by this study. The advocates of straight internships are admittedly more concerned with training specialists for practice, research, and teaching. Most of these believe that the rotating internship is unnecessarily repetitious of the clinical clerkship and too superficial in educational content to satisfy the needs of many of today's medical graduates.

*The degree of satisfaction offered.*—

All who have designed educational programs and attempted to carry them out as planned will admit that the final result may not properly reflect the philosophy, thought, and effort which went into the planning. This is especially true when the program calls for implementation by many individuals, some of

TABLE 32

Q. "To what extent has your internship been a valuable educational experience beyond your clinical clerkship in medical school?"

(% answering "Much")	
Rotating	76
Mixed	70
Straight medical	91
Straight pediatric	94
Straight surgical	65

whom may not fully understand, or agree with, what has been designed. Since interns were the only ones who could tell us what the overall results of our efforts at conducting internship programs were, their evaluation of the degree of success was sought. Although the intern cannot be considered a completely impartial observer, neither can his instructors nor the observers of this study be considered to be without bias.

Table 32 indicates the extent to which interns felt that their internships added educationally to their clinical clerkships. It can be seen that straight pediatric and straight medical internships were given the highest rating by 94 per cent and 91 per cent, respectively, of the interns taking them. Only 76 per cent of rotating interns so rated the educational value of their experience, followed by 70 per cent of mixed interns, and 65 per cent of straight surgical interns.

Respondents to the questionnaire were then asked to express their satisfaction with their internships in terms of their ultimate goal in medicine. Response to this question is shown in Table 33. The term "very valuable" was the highest rating on a 4-point scale. This rating was given to their internships by 82 per cent of straight pediatric and 74 per cent of straight medical interns, while the corresponding figure for rotating interns was 62 per cent, for straight sur-

TABLE 33

Q. "How valuable do you feel your internship has been in terms of your ultimate goal in medicine?"

(% answering "Very valuable")	
Rotating	62
Mixed	45
Straight medical	74
Straight pediatric	82
Straight surgical	48

gical 48 per cent, and for those in mixed internships, 45 per cent.

A preliminary report of these findings brought forth the comment from some that these interns were likely to value their internships more highly several years hence than they did at the time of the survey. Perhaps this is true. Even so, it would be a matter of retrospective analysis and might be subject to as much criticism as the present study. Furthermore, the fact remains that if university hospital internships are educationally more valuable than these figures indicate, then those of us who are responsible for them have somehow obscured the point for the interns.

#### CHAPTER IX—THE INTERN LOOKS BACK—AND AHEAD

##### 1. THE SENIOR (4TH) YEAR IN RETROSPECT

In keeping with the objective of relating the internship to other years of medical education, students at each of the medical colleges visited were questioned about various aspects of their 2 clinical years. Many of them expressed considerable dissatisfaction with the fourth-year program. While this may have been partially attributable to the phenomenon of the "senior let-down," we were impressed with the insight of many of the criticisms and the sincerity with which they were made. Time did



TABLE 34  
RELATIONSHIP OF CLERKSHIP YEAR TO EVALUATION OF SENIOR YEAR

STATEMENT	INTERNS HAVING 3D-YEAR CLERKSHIPS (N = 553)	INTERNS HAVING 4TH-YEAR CLERKSHIPS (N = 606)
	% answering "true"	
Fourth year more valuable than third year	41	72
Fourth year was a "let-down"	33	12
Fourth year a greater intellectual challenge than third year	46	67

not permit extensive investigation of fourth-year curricula to determine where the difficulty might lie. However, it was possible to obtain the interns' retrospective evaluation of the organization of their senior years. The clinical clerkships of some schools are fairly equally divided between the third and fourth years, but 45 per cent of the interns had had most or all of theirs in the third year, while 52 per cent had had them in the fourth year.

Over-all, 55 per cent of the respondents felt that the fourth year of medical school was more valuable to them than the third had been, and an identical percentage felt that the fourth year also presented a greater intellectual challenge. When these responses were related to the year of clerkship, however, significant differences appeared, as shown in Table 34. We have little doubt that to most students the clinical clerkship appears to be the high point of their 2 clinical years. Our figures suggest that some

programs offering clerkships in the third year have failed to provide an equally interesting and demanding program in the fourth year.

The responses to four questions pertaining to teaching in the fourth year are summarized in Table 35. (The statements used are quotations from interviews held with groups of medical students in several schools during the earlier phases of the study.) The figures shown in Table 35, as well as personal observations, lead us to believe that medical colleges generally have failed to achieve the same high level of instruction—and consequently to generate the same degree of student interest—in out-patient departments as on the wards. When asked bluntly about this point, only 53 per cent of interns felt that teaching in out-patient clinics was "about as good" as on the wards. Students and interns were outspokenly critical of the point made in statement (2) of Table 35. Many felt that their teachers regarded

TABLE 35  
INTERN EVALUATION OF FOURTH-YEAR TEACHING

Statement	% answering "True"
1. "My fourth year was largely spent in the out-patient clinics."	39
2. "The best clinical teachers in our school did little teaching in the out-patient clinics."	47
3. "We didn't get much teaching in the fourth year."	20
4. "My responsibilities and activities as a senior (4th year) student were very nearly the same as those I have had as an intern."	23

TABLE 36  
INTERN EVALUATION OF FOURTH-YEAR ELECTIVES

Question	% answering "Yes"
1. Would you have preferred not to have an elective period?	1
2. Do you consider the choice of electives available to you was well planned (as to content, educational value, relationship to your interests, facilities)?	89
3. Did you find the time spent on your elective to be a valuable experience?	94
4. Would you have liked the elective time better if a wider range of opportunities had been offered?	22
5. Would you have preferred a longer period?	33

out-patient teaching as distinctly less important than in-patient teaching.

An elective period in the fourth year averaging approximately 10 weeks in length had been taken by 55 per cent of the interns. That the reaction to this experience was overwhelmingly favorable is shown by the replies to five questions about the elective period given in Table 36. In a few schools, the elective program could be beneficially broadened in scope, as shown in question (4). The 33 per cent who would have preferred a longer elective period were those whose elective period was only 4-6 weeks. Although the senior elective is not the answer to all the problems encountered in fourth-year teaching, the fact that such a large number of students find it to be a very useful educational device indicates to us that opportunity for independent, but guided, work in the last year of medical school should be increased. When these activities are well planned and the students select carefully which ones they shall undertake, the experience can be most rewarding.

## 2. INTERNS' PLANS FOR THE FUTURE

*Career choices.*—Interns were given an opportunity to indicate which of 24 specialties and subspecialties of medicine they expected to enter. Of the interns

completing the questionnaire, 1,025 (85.5 per cent) expressed a choice, as shown in Table 37. Twenty-nine per cent planned to enter general surgery or a surgical subspecialty. Internal medicine was the choice of 23.5 per cent, whereas pediatrics, psychiatry, and obstetrics-gynecology attracted 10 per cent, 7.5 per cent, and 7 per cent, respectively. Only 8 per cent of our respondents planned to enter general practice.

One or more rotating interns expected to go into eighteen of the 24 specialties listed, whereas mixed interns were planning to enter seventeen fields. Somewhat surprising is the fact that 42 per cent of those in straight medical internships planned to go into sixteen different fields outside of that specialty, 8 per cent of them into surgery. All but a few of those taking straight surgical or pediatric internships planned to stay in that specialty or one closely allied to it.

What type of internship was selected by men entering a particular specialty? The distribution of those entering nine of the specialties is shown in Table 38.

All but two of the men entering general practice chose a rotating internship. Only fourteen men (1.4 per cent) planned careers in basic science areas. Of these, nine took a straight medical internship, three took mixed, and one each took rotating and straight pediatrics. Of the

TABLE 37

	ROTATING	MIXED	STRAIGHT MEDICINE	STRAIGHT PEDIATRICS	STRAIGHT SURGERY	TOTAL	
	N	606	65	187	54	113	1025
		(per cent)	(per cent)	(per cent)	(per cent)	(per cent)	No. Per cent
1. Anesthesiology	3.0	1.5	....	....	1.0	20	2.0
2. Basic science	....	4.5	5.0	2.0	....	14	1.4
3. Dermatology	1.0	....	....	....	....	8	0.8
4. General practice	12.0	1.5	0.5	....	....	76	7.5
5. Hospital administration	....	....	....	....	....	....	....
6. Industrial medicine	0.5	....	1.5	....	....	6	0.5
7. Internal medicine	18.5	35.0	58.0	....	....	243	23.5
8. Military medicine	....	....	....	2.0	1.0	3	0.3
9. Obstetrics-gynecology	10.0	6.0	4.0	....	4.5	74	7.2
10. Ophthalmology	5.0	1.5	2.5	....	2.0	37	3.6
11. Pathology	3.0	8.0	2.0	....	....	29	2.8
12. Pediatrics	8.5	1.5	1.5	81.5	1.0	103	10.0
13. Physical medicine	....	....	1.0	2.0	....	5	0.5
14. Preventive medicine	....	....	0.5	....	....	2	0.2
15. Psychiatry	8.0	9.0	11.0	7.5	....	78	7.5
16. Public health	....	....	1.0	....	....	2	0.2
17. Radiology	4.0	4.5	2.5	....	2.0	32	3.0
18. Surgery, general	15.0	14.0	6.0	5.5	49.5	169	16.5
19. Urological surgery	2.0	1.5	0.5	....	5.0	21	2.0
20. Orthopedic surgery	4.5	3.0	0.5	....	12.0	43	4.3
21. Neurological surgery	2.0	3.0	....	....	10.0	26	2.5
22. Thoracic surgery	0.5	1.5	1.0	....	9.0	17	1.7
23. Otorhinolaryngology	1.5	1.5	....	....	1.0	12	1.2
24. Plastic surgery	0.5	1.5	....	....	2.5	8	0.8

243 who were attracted to internal medicine, 108 took straight medical internships, while 112 took rotating and 23 took mixed. Half of the prospective pediatricians selected rotating internships, and the other half were distributed among all the other types. Approximately 80 per cent of those going into psychiatry selected either a rotating or a straight medical internship.

*Effect of internship on choice of career.*—One of the reasons most frequently given by faculty members for recommending that students select rotating internships was that exposure to many fields of medicine enabled the intern to make a wiser selection of the one in which he wished to work. Many senior students also gave this as a major reason for selecting a rotating internship. Interns and residents, however, pointed out that in actual practice the vast majority of them had to apply for a

residency appointment before they had completed even half of their internship year. Obviously, therefore, the internship must have much less value in this regard than is generally assumed. We attempted to determine the extent to which this was true by asking the questions shown in Table 39.

Table 39 (A) shows that 85 per cent of interns had decided upon a field of interest before they began the internship. Only 11 per cent changed their minds during internship, and 15 per cent selected a field for the first time while interning. What influence, then, did the internship experience have on the choice of a career? Table 39 (B) indicates that the choice of 41 per cent of interns was unaffected by their internship experience and that an additional 19 per cent chose their field in spite of having had no experience, or an unfavorable one in that field as an

TABLE 38  
TYPE OF INTERNSHIP SELECTED (NO.)

Career choice	Total	Rotating	Mixed	Straight medical	Straight pediatric	Straight surgical
Basic science	14	1	3	9	1	...
General practice	76	74	1	1	...	...
Internal medicine	243	112	23	108	...	...
Obstetrics-gynecology	74	58	4	7	...	5
Pathology*	29*	20	5	4	...	...
Pediatrics	103	51	4	3	44	1
Psychiatry	78	46	7	21	4	...
Radiology	32	22	3	5	...	2
General surgery	169	89	9	12	3	56

\* The number of interns indicating pathology as a choice of career (29) is somewhat misleading. In addition to these, who took one of the internships indicated, approximately the same number selected straight internships in pathology.

TABLE 39  
(A)

1. Interns who had selected field before beginning internship— (Those changing mind during internship—11%)	Per cent 85
2. Per cent choosing field for first time during internship	15
(B)	
3. Career choice unaffected by internship experience	41
4. Choice made in spite of no intern experience in field	12
5. Choice made in spite of unfavorable intern experience in field	7
6. Choice influenced by favorable intern experience in field	40

intern. Forty per cent felt that their decision had been influenced by a favorable experience in the specialty during internship.

From these figures and the statements made to us by house staff during interviews, we conclude that the internship experience has much less direct influence on a man's choice of a residency and a career than it may have had years ago. Further, we were impressed by the fact that 74 per cent of medical students had a pretty clear idea of what field interested them most by the time they were completing their fourth year. Critics will point out that our figures came from interns nearing the end of their year and are, therefore, subject to an error which could only have been minimized had we actually determined the career choices of these men at the time of graduation. Unfortunately, we had no opportunity to do this, but we do not believe this error is substantial.

It was interesting to learn what fields

were chosen by those who first selected one during internship. Table 40 shows an analysis of the information provided by the 161 interns who responded on this point. The largest number had selected surgery or a surgical subspecialty (34 per cent) and the next largest group chose internal medicine (17 per cent).

*Residency plans.*—Table 41 indicates that 93 per cent of the respondents planned to take residency training, and 85 per cent planned to take specialty board examinations. Seventy-six per cent already knew in what hospital they would begin their residency, but only 39 per cent were definitely staying in the hospital of internship. Sixty-nine per cent expected to serve in the armed forces, but 53 per cent hoped to delay this until they had completed residency training.

*Appointment of residents from hospital's own interns.*—Departmental chairmen were also requested to inform us

TABLE 40  
FIELD CHOSEN BY INTERNS  
MAKING SELECTION DURING INTERNSHIP

Field	No.	Per cent
Surgery and surgical specialties	54	34
Internal medicine	27	17
Psychiatry	14	9
General practice	13	8
Obstetrics-gynecology	12	7
Pediatrics	10	6
All others	31	19
	161	100

of the number of first-year residents each had appointed in the years 1958-59 and 1959-60, and to indicate how many of these had come from the intern staff of his hospital. Table 42 (A) shows that of 26 departments of medicine reporting, none had taken less than 25 per cent of their first-year residents from the hospital's own interns. Seven departments had appointed more than 75 per cent of their beginning residents from their intern staff. The figures for surgery are similar, but three departments of obstetrics and five departments of pediatrics had selected all their first-year residents from the interns of other hospitals.<sup>10</sup>

The percentage of residents appointed from a hospital's intern group is the result of the combined effects of several factors, three of which are: (a) the number of applicants it attracts from among its interns; (b) the qualifications of these men compared with those of interns applying from other hospitals; and (c) departmental policy regarding the number of residents who should be appointed from its own intern staff.

Table 42 (B) shows that for the 2-

<sup>10</sup> These figures refer only to hospitals in which there were interns on these services. The six departments of obstetrics which did not appoint interns, or have any rotating through the service, are not included in these calculations. All departments of pediatrics in this study had interns assigned to the service.

year period, 1958-60, 62 per cent of first-year residents in medicine came from the intern staff of the same hospital. Corresponding figures for surgery, pediatrics, and obstetrics were 61 per cent, 40 per cent, and 32 per cent, respectively. These four specialties appointed 1,439 first-year residents (over the 2-year period in the 27 hospitals) 53.5 per cent of whom had interned in the hospital in which the residency appointment was made. This latter figure is higher than the 39 per cent reported in Table 41, because it covers a 2-year period and takes into account men returning as first-year residents after a tour of military duty. Over-all, therefore, the likelihood of an intern's receiving a residency appointment in the same hospital is about the same for medicine and surgery, considerably less in pediatrics, and lowest in obstetrics. Since 79 per cent of interns said they were satisfied with the attractiveness of their hospital's residency program, it seems likely that more interns than are actually selected from the hospital's own staff would prefer to continue in its residency program. Perhaps this is as it should be, for it indicates that these hospitals are being selective in appointing residents. On the other hand, the eight departments which selected all their beginning residents from other hospitals should consider carefully whether or not their programs may be relatively unattractive to good men from their own intern staff.

#### CHAPTER X—INTERPRETATIONS AND RECOMMENDATIONS

##### 1. INTRODUCTION

The criticisms, suggestions, and recommendations in the sections to follow are based upon the entire body of data gathered during the study including the observations made, and impressions formed during the hospital visits. Some

TABLE 41  
RESIDENCY PLANS

	Yes	No	No response
Do you plan to take residency training?	93%	5%	2%
Do you know in what hospital you will have this training?	76	21	3
Is it the same in which you have interned?	39	48	13
Do you intend to take board examinations in a specialty?	85	9	6
Do you expect to serve in the armed forces?	69	28	3
Do you hope to delay this until after completion of a residency?	53	29	18

Thirty-five per cent of our respondents who planned to go into practice were undecided as to what its nature would be. However, of the remainder, only 11 per cent indicated a preference for solo practice, whereas 46 per cent preferred either partnership or group practice. While only 0.5 per cent said they planned on careers entirely devoted to research, 67 per cent said they hoped to do "some" teaching or research.

TABLE 42(A)  
APPOINTMENT OF FIRST-YEAR RESIDENTS  
(Years 1958-59; 1959-60)

	No. PROGRAMS REPORTING	No. PROGRAMS APPOINTING VARIOUS PERCENTAGES OF FIRST YEAR RESIDENTS FROM OWN INTERN STAFF				
		0%	1-25%	26-50%	51-75%	76-100%
Medicine	26	..	..	10	9	7
Obstetrics*	20	3	7	8	1	1
Pediatrics*	27	5	4	9	7	2
Surgery	25	..	4	8	8	5

TABLE 42(B)

	Medicine	Obstetrics	Pediatrics	Surgery
First-year residents appointed 1958-60	489	164	303	483
Residents appointed from intern staff of same hospital	302	53	122	293
	62%	32%	40%	61%

\* See footnote 10.

are supported by the statistical information given in the preceding chapters, whereas others necessarily deal with aspects of the internship which are difficult to quantitate. It should be clearly understood that these comments are intended to be constructive in nature. The opinions expressed are the considered judgment of the committee and the study director. Although the statistical sections are based largely on information obtained by questionnaire, we believe that conclusions derived from them are valid because students and interns generally are more sophisticated in their analysis of intern programs than some physician-teachers have considered them to be.

The committee has avoided analyzing the data by hospital since it was not intended that the study should compare individual programs. It is hoped that the findings have been presented in such a manner as to be helpful to the various committees and departments of all medical colleges and their major teaching hospitals as they seek answers for their own questions about the internship.

*Should the internship be continued?*—The answer to this question is partially a matter of semantics. For the vast majority of men, graduate medical education begins immediately after completion of the formal medical school curriculum. What should the first year be called—internship, residency, fellowship,



or some new term? Two facts remain unchallenged in any discussion of this matter: (a) at the moment, a majority of states require completion of a satisfactory "internship" for licensure; (b) whatever it is called, the first year of graduate medical education must be provided by some agency. With these facts in mind, we must decide whether or not university hospitals should offer first-year programs, and if they should, how such programs should be organized and what they should provide.

For perhaps the majority of medical college graduates, the intern year is the *mid-point* of their formal medical education. It is our opinion that to isolate the internship, to treat it as a thing apart, required by law but of no real educational importance, and to plan it in a casual manner, is to imply that we have created an educational anachronism for which we should like to disclaim further responsibility.

Several medical colleges have discontinued internships in their major teaching hospitals and have publicly expressed satisfaction with this move. This committee believes that certain real objections to such a step are relevant to this discussion. In the first place, we believe that hospitals associated with medical colleges are in a position to offer graduate programs of the highest caliber (in spite of the criticisms made herein). We further believe that they are morally obligated to offer as many such programs as their facilities permit, so as to provide the educational continuum discussed below. The propriety of forcing all men to spend their first graduate year outside the university environment seems highly questionable to us.

It has been suggested that eliminating interns from the university hospital scene avoids any conflict of interest between interns and students, and between

interns and residents. We believe we have shown that there is no inherent, fundamental conflict between students and interns. When conflict does occur, it appears to be the result of faulty design of both the clinical clerkship and the internship that has resulted in unnecessary overlapping and reduplication. In this connection it should be pointed out that those internships which have been discontinued were rotating programs. Straight internships, and some mixed programs, as we observed them, placed the intern in a role that was not essentially different from that of most first-year residents in those hospitals which had only rotating internships. Perhaps, then, those who advocate eliminating the internship are actually suggesting that rotating internships be discontinued.

However, if the intern year is to be modified so as to make it a "junior residency," will this not simply increase the difficulties between interns and residents? The data presented, however, have shown that the greatest difficulty occurs between rotating interns and residents rather than between straight interns and residents. We observed that after a few months straight interns are accepted in principle as junior members of the resident group, and as the year progresses, they are permitted to assume more and more of the duties of a resident. Hence, the year provides a smooth and easy transition from the student year to the residency. That this statement is not equally true for all specialties does not, in our opinion, negate the principle. The sections to follow offer specific suggestions for altering and upgrading the role of interns in surgery and in obstetrics and gynecology.

Some have protested that it would be better to change the name of the year. We firmly believe that it is rather the concept of the year which needs chang-

ing; but if the name "internship" implies a separate experience unrelated to those phases of medical education which precede and follow it, then we would agree that the term should be dropped.

We do not believe that the deficiencies of the senior year in medical school, or those of "the internship," can be solved by passing the entire responsibility for intern training on to the staffs of private, community, and city hospitals unassociated with medical colleges. These institutions are exclusively committed to patient care for the community, and they are staffed by physicians who have acknowledged relatively little interest in teaching. The university hospital, on the other hand, recognizes the interdependence of patient care, teaching, and research. Indeed, the last two result not only in superior patient care within such institutions, but ultimately in the improvement of patient care wherever its graduates go into practice. Therefore, rather than abandon internships, it would appear more profitable for all concerned if medical colleges redesigned both their senior years and the intern programs in their teaching hospitals to eliminate unnecessary repetition.

## 2. CONSIDERATIONS OF UNIVERSITY HOSPITAL INTERNSHIPS IN 1960

The concern about the internship which is shared by physicians, hospital administrators, governments, and the public, has been manifested by the many articles on the subject appearing in the lay press. Unfortunately, the interest of most of these has centered on a single aspect of the situation, namely the "intern shortage." This term is but another way of saying that hospitals need someone on continuous duty to provide modern medical care for their patients. This study has not, and could not, concern itself with the so-called intern shortage; however, some of the findings and recom-

mendations are believed to be pertinent to that problem.

In brief, we believe that a revised concept of the internship should be adopted in hospitals associated with medical colleges, and we propose the following guide:

1. The internship, or first year after medical school, should be conceived and planned as part of a closely integrated formal program of medical education which begins on entry into medical college and ends with the completion of residency training.

2. To accomplish this, medical schools, through their faculties, should assume responsibility for all years of graduate education and training, including the selection of interns and the assignment of their duties.

3. The goals of each program should be determined primarily on an educational basis, and, where necessary, steps should be taken to improve or eliminate assignments which are educationally weak.

4. Assignment to some services, particularly subspecialties in certain hospitals, should be deferred until after the first graduate year.

5. All programs should introduce more flexibility into their schedules to meet individual needs and interests, while providing a balanced and fundamentally sound experience.

6. Twelve-month rotating internships should be sharply modified to lengthen the time on each service and to reduce the number of assignments, with the ultimate goal of eliminating 1-year rotating internships and replacing them with longer, coordinated graduate programs.

7. More straight internships should be modified to permit assignment to another service or specialty when educationally appropriate to the intern's goals.

It is further recommended that, when medical colleges have wholly assumed

the responsibility for the internships in their hospitals and have integrated them into a program of greater length, that all specialty boards then recognize the first year of education after medical school as a residency year, regardless of the name it bears. Failure of the boards to take such a step has fostered, and will continue to foster, the concept of the intern year as an isolated and unrelated year of medical education. Taking such a step, on the contrary, would immeasurably increase the status of the internship and help to give it dignity and value. Furthermore, it was not originally the intent of specialty boards to dictate the precise patterns that graduate medical education should follow, but to safeguard the interests of the public by assuring that a physician who presented himself as a specialist did indeed have the necessary qualifications. The results of the boards' own examination are adequate evidence that a man's knowledge and qualifications are not determined solely by his age or the number of years he has spent in a field. If he can demonstrate to the boards that his knowledge and judgment reflect superb education in his field, then they should not be overly concerned with the details of the schedule he followed or the length of time it has taken him to acquire his knowledge and skills.

The foregoing synopsis presents a philosophy which is not really new and is hardly dramatic or radical in concept. It is hoped, however, that the amplification which follows may serve to emphasize areas wherein specific changes are believed to be urgently needed.

#### *The Internship as Part of an Educational Continuum*

One of the oldest principles of education holds that each phase should build upon the previous one and prepare for the next. Medical education seems un-

usually episodic in nature, and the internship phase is no exception. This is particularly true of certain rotating programs in which many duties repeat the experiences of the clinical clerkship without adding significantly and thus fail to prepare adequately for the residency years to follow.

To this committee it seems logical and essential that each department determine for itself that level of intellectual and technical achievement it desires in its first-year residents, and then design an internship experience which makes it possible for this level to be reached. This would require that the department be able to determine the specific assignments the intern would have on its services, the duration of each assignment, and the nature and volume of work on each. These conditions are most nearly approached by straight internships, for it is only in such programs that a department fully controls all these variables. Only in straight (and certain mixed) internships is it possible to permit an intern to exploit to the maximum his ability to learn by allowing him to pursue more fully his special interests, assume responsibility more rapidly and to a greater degree, and to participate in a large variety of activities which further his knowledge and training. We believe that this accepted procedure in graduate education in other fields should be applied to internship-residency education.

As a logical corollary of the philosophy of an educational continuum, a high percentage of interns should have the opportunity to stay on in a residency program of the same hospital. This should not be interpreted to mean that we believe it is never wise for interns to change hospitals to take a residency. The programs of several institutions may be sufficiently similar so that the concept of the continuum is preserved, and, in fact, if such moves are carefully planned, they

may provide an even greater degree of coordinated graduate education than is possible within a single institution.

*Medical School Responsibility  
for the Internship*

A number of medical schools formerly required their graduates to complete a satisfactory internship before awarding them the degree of Doctor of Medicine. Much of this report deals with the results of the decreasing interest which the schools have shown in the internship since that time. The manner in which a hospital selects its interns is illustrative.

In most of those studied, interns were selected by members of the clinical staff who were also members of the medical school faculty. This was true of all hospitals offering only straight internships, since the selection was on a departmental basis. In most hospitals having rotating internships, selection was made by an intern committee whose membership was composed of representatives from each clinical department. However, in a small group of hospitals, selection was made largely by hospital administrators. This, probably more than any other single feature of the internship situation, indicates how far medical schools have gone in abrogating responsibility for this phase of medical education.

Such a policy seems highly inconsistent with other policies and principles of medical schools. It is difficult to see why a medical faculty would be willing to accept responsibility for teaching men whom it had not selected, expose its students to their example and teaching, and be considerably dependent upon them as a source of residents. To the observers, this appeared to be a most undesirable state of affairs. It is recommended, therefore, that medical faculties work out with hospital administrators (and, if necessary, with local government) an agreement which will permit the medical

staff to select all interns appointed to their major teaching hospitals, wherever this policy is not already in effect.

Education is paramount in an internship. However, the medical staff must not forget that to the intern this is a most critical year of his life. Often he begins it with much anxiety about his ability to "measure up," and with some uncertainty about the hospital in which he is to spend this year. A reasonably organized and implemented orientation program should help to put him at ease, make him feel welcome, and acquaint him with the hospital environment. It should also help to make him appreciative of the learning opportunities provided, and eager to take greatest advantage of them. Such orientation means much more to the intern if the clinical staff, particularly departmental chairmen, participate, rather than if it is left entirely to the administrative staff.

It is also important to remember that, as the year progresses, rotating interns in particular will continue to need orientation as they move from service to service. Unfortunately, most of the rotating internships observed tended to overlook this. A much better job was done in orienting the first group to come on a service than any succeeding group. The assumption was, of course, that all subsequent groups of interns should already be familiar with basic hospital routine and should, therefore, need correspondingly less specific service orientation. This assumption, however, overlooked the fact that for the intern first coming onto surgery, for example, there was disappointingly little carry-over from the other services to which he had already been assigned. He could not know the personalities of the individual surgeons with whom he would be working, nor could he anticipate their individual preferences in the management of particular patients.

While not essential, we believe it advisable to assign to one or more members of each departmental staff the specific responsibility for liaison with interns and residents. The precise manner in which this is done seems less important than the fact that someone makes known to the house staff that he has a genuine interest in the latter's welfare, both professional and personal.

The authority of the clinical staff should include total responsibility for designating an intern's duties. Only in major emergencies, and then only after consultation with the clinical chiefs of service, should the administration request that an intern be reassigned to an area or service other than that for which he was originally scheduled. Any other policy is tacit admission that in its concern with service, the hospital is overlooking its educational obligations. In some hospitals, the administrative staff had the authority to change intern assignments at its discretion.

#### *Service vs. Education*

Medical education for the intern is inseparable from service to patients, since learning at this level requires active participation in patient management rather than passive observation. However, a maximum of service does not necessarily provide even minimally acceptable education. The potential trouble spots in the internship have been identified by this study, but most of these were already known to the participating hospitals. Private patient services, overloaded emergency rooms, overtaxed outpatient clinics, services with excessive numbers of admissions, those in which the intern performed excessive clerical work and received little teaching, and those which gave him too little responsibility—all brought the accusation of "exploitation" from the intern.

Such "weak" services can and should

be strengthened in all university hospitals. This may require assigning an additional intern to a service traditionally calling for only one. It may mean improving the quality of the teaching rounds by assigning different staff men to the job. As a last resort it may be necessary to reorganize completely a particular assignment or even to eliminate it entirely from the intern schedule.

Such remedies may be difficult to apply. Assigning additional interns to one service may increase the difficulty of scheduling the remainder of assignments. It is always unpleasant to have to tell a loyal staff member that his services on the rounding schedule are "no longer needed." Informing the attending staff of a private service that they must redouble their teaching efforts and give more responsibility to interns or face the possibility of having none, may not be well received. Obviously, all such steps should be taken only after careful and impartial consideration and should be carried out with all possible tact and diplomacy.

The facts are, however, that such measures have already been used effectively. Services have been revitalized by changing the attending staff, and a firm but tactful insistence on giving the intern more attention has been successful in achieving significant improvement in some programs. In view of the data presented about private services, these assignments should be made educationally worth while or dropped from the intern schedule. If they must be included to give interns sufficient patient experience, then it is mandatory that whatever steps are necessary be taken to prevent exploitation of interns, and to provide adequate teaching.

#### *Eliminating Interns from Some Services*

Unquestionably, an intern's time in the subspecialties of medicine and sur-



gery can be enjoyable and profitable. Such services as anesthesiology, otolaryngology, hematology, endocrinology, orthopedics, and neurology were cited by some interns as their best assignments. Some were also rated as a "waste of time" by other interns. The chief difficulty here lies in trying to include all these in a fixed rotation limited to 12 months. We believe it is an error for such subspecialty assignments ever to replace time on the general medical and surgical wards. Since we also believe that assignments of less than 4 weeks are to be avoided, it naturally follows that only one or two such subspecialties can be included at all in a rotating internship. Straight internships can use these assignments in a most advantageous manner to give a depth of experience exceeding that of the general wards.

Insofar as rotating plans are concerned, some assignments in certain hospitals probably should not be included and others should be offered only as electives. These services should have only residents to carry out the day-to-day management of patients, but should be willing to accept interns who elect the service and see that their association is mutually satisfactory.

A few specific services draw attention. At least two emergency departments had such a limited volume or variety of patients that the intern's time there could hardly be justified. At least two others had such an overwhelming volume of patients that drastic changes were needed. These changes should include an increased number of house staff to man the emergency service, and the inclusion of residents to provide more assistance and supervision for interns. A similar situation existed in certain out-patient clinics, and the same recommendations apply.

While the principle of having an intern perform some laboratory procedures

on the patients under his care is desirable, some services carry this to an extreme and require the intern to perform tasks (cited earlier) which should be done by technicians and aides.<sup>11</sup> In view of the considerable amount of laboratory work performed by clinical clerks, laboratory assignments, as a separate block of time, should probably not be a required part of the rotation. Some of these exploit the intern for service and offer him little valuable experience.

In recommending that certain services be handled by residents only, we have kept in mind the fact that such a step may require residents to take more complete histories, perform more complete physical examinations, and record these in somewhat greater detail than is the case at the present time, judging by the records examined. We do not believe this is harmful to the resident. Some residents seemed to have developed the attitude that it was professionally beneath them to be as complete in their medical history and physical examination as the intern. By inference, only interns take thorough histories, make complete examinations, and record detailed notes of the findings. Small wonder then, that by the time these men reach private practice they demand that interns do these things for them on their private patients. University hospital residencies should not be guilty of fostering poor medical habits in their residents.

#### *More Flexible Schedules*

If the internship is ever to merit the designation "graduate" medical education, then it must be freed of assembly line methods. The committee does not condone so flexible a program that a man

<sup>11</sup> Gynecological, obstetrical, and surgical services are discussed below in greater detail.



could avoid all services which tax him physically, require him to exert himself professionally, and interfere with his social life; nor did we find that interns wanted such indolence.

On the contrary, a department should set high standards of performance for its interns. It should assure them of full exposure to the fundamentals of good patient management, but at the same time offer them some opportunity to pursue special interests. This is possible in several ways, some of which follow:

1. Permitting the election of substantial additional time on the services of one specialty;
2. Offering several plans of rotation, thus making it possible for the intern to select one which has the closest application to his anticipated needs and career plans;
3. Permitting interns to exchange blocks of equal time in subspecialties, so long as these exchanges do not violate the basic goal of the internship;
4. Allowing those interns who are qualified and wish to do so, to participate in clinical research or follow special groups of patients over longer periods of time (both in and out of the hospital);
5. Including some assignments which do not demand all of the intern's time in caring for patients and which will permit him to use the library to prepare reports or discussions to be presented before his colleagues and instructors.

#### *Modifying the Rotating Internship*

It is the consensus of those conducting this study that there are serious educational deficiencies in most 12-month rotating internships. These have been enumerated in earlier sections and will not be repeated here.

Graduating medical students for some time to come are likely to continue to seek rotating internships for the reasons given in Chapter VIII. Therefore, the

questions confronting university hospitals are two: (a) does the clinical faculty believe that a rotating program is educationally sound; and (b) does it feel obligated to offer a rotating program for those men who desire it? In some schools, the answer to both questions is "yes"; in some it is "yes" to the first and "no" to the second; while in others the answer to both questions is "no." Since all major teaching hospitals are not likely to discontinue rotating internships, consideration must be given to ways of improving them.

One of the most urgently needed modifications, we believe, is that of increasing the length of time the intern spends in a single specialty. Frequent changes of assignment make it difficult for the intern to establish meaningful inter-personal relationships with the senior staff. If the changes are sufficiently frequent (and the assignments correspondingly brief), instruction tends to become superficial, restricted to the commonplace, and consequently neither stimulating nor challenging. Therefore, in planning rotating internships, a guiding principle should be that assignments to each service extend over a period of time sufficiently great to enable the intern to achieve a specific goal which has been previously determined to be both desirable and feasible. Departments might ask themselves what minimal level of experience and training would be acceptable to them in terms of preparation for the next step in the intern's career. Three examples may serve to clarify the point. A rotating internship may be the first graduate year in preparation for any of the following:

1. As the first year of a program in preparation for a surgical residency, it must provide enough experience in the diagnosis and management of "surgical disorders" to enable the man to function properly as a first-year resident. Some

would add that as preparation for a surgical residency the intern should also have more than a superficial knowledge of common gynecological disorders, some experience in the handling of children, and enough time on the medical services to enable him to manage patients with mild diabetes, congestive cardiac failure, electrolyte imbalance, and pulmonary insufficiency, since all these occur as complications in patients undergoing surgery. He should also know when these complications are severe enough to require additional help through consultations.

2. As preparation for a medical residency, the internship could reasonably be expected to provide sufficient experience in each of the subspecialties of internal medicine to enable a man to manage most of the common problems on this service as a first-year resident, and to know when and how consultation should be obtained for his more seriously ill patients. However, some would add that this means having enough contact with surgical and gynecological patients to recognize quickly when abdominal pain is indicative of a disorder which may require surgical treatment. He should also be prepared to give helpful suggestions when consulting on surgical patients.

3. As preparation for general (or family) practice, the requirements are even greater. Such a physician should be sufficiently experienced to qualify for an appointment as a first-year resident in each of the fields of medicine, surgery, obstetrics, gynecology, pediatrics, and psychiatry. To expect that he actually do general practice with less competence than this is to ask him to attempt that for which he is not prepared. Since he cannot hope to acquire this experience in a single year, the first or intern year should be carefully planned as part of his longer educational program.

The crucial point, then, becomes the length of time required to achieve any one of these three goals. Opinions on this point vary greatly, but from the educational viewpoint we believe that adequate preparation for each of these goals requires extended periods of training in each of the areas mentioned. In planning an internship for each of these men, the conclusion is eventually reached that an educationally sound rotating program would require more than 12 months. This was also the opinion of many physician-teachers who were interviewed. How long it should be, what it should include, and how the time should be apportioned would depend on the specific objectives of the program and the experiences an individual hospital is prepared to offer.

Following this line of reasoning, we repeat the recommendation that rotating internships be modified so as to lengthen the time spent in one or two areas rather than assigning the intern briefly to many subspecialties in a 12-month program. When all-inclusive programs are designed primarily for reasons of "coverage" or to provide "exposure" to a field they violate the principles of good teaching and, in our opinion and those of many interns and residents, they result in a *potpourri* of experience which does not merit the name "graduate medical education."

Whether the appropriate alternative to an all-inclusive 12-month rotating internship is a 12-month mixed internship, a 12-month straight internship or a 24-month, slowly rotating internship (or residency) is a matter for each faculty to decide for itself. Some who have had experience with the 2-year rotating program prefer it to their present 12-month programs. Some hospitals see their proper role as restricted to the training of future specialists, investigators, and teachers, and for their purposes a

straight internship has much to recommend it. For others, the solution is a difficult one. One departmental chairman pointed out that for some time to come, the area of the country to which his institution supplies physicians will probably require more men for family practice than specialists. His hospital, he believes, has a moral obligation to offer some of these men training on the highest educational level possible, although, personally, he would prefer to have straight internships leading to specialization because he finds it intellectually and emotionally more satisfying to teach a few men in depth, than many men superficially. As preparation for general practice, he looks on a 2-year hospital program as a "minimum requirement."

The internship—however designated or classified—should be part of a well-planned program. It should set realistic goals and receive as much attention from senior staff as residents now get. It should no longer be merely the door to a residency—it should, in fact, be an integral part of that residency.

#### *Modifying Straight Internships*

While this report has been more critical of rotating than of straight internships, this does not imply that the latter are without fault. For reasons which have been cited repeatedly straight internships offer a greater potential for educational superiority. However, from the data presented, it is apparent that not all of them achieve this goal. Many of the same defects found in rotating programs appear here as well. There is undue rigidity of schedule and too little opportunity for elective work, too much clerical work and poor utilization of time. Uninterested teachers, dull rounds, and mediocre conferences are not confined to any one type of internship and are just as disastrous to a straight program as to a rotating one.

Of major concern, however, is the inclusion of certain assignments for service purposes, especially those private services which are insufficiently rewarding in teaching and responsibility. These services need not necessarily be distasteful and profitless to the intern, for in a number of straight programs, this was not the case. In a straight internship, the senior staff has greater opportunity to know the interns, and the interns have already indicated a particular interest in the specialty. It is difficult, therefore, to find any acceptable reason for including in their rotation, a service whose attending staff members are not willing to make their experience worthwhile.

Of equal concern is the failure to allow opportunity for interested interns to take on additional work, participate in suitable clinical investigation, and expand their knowledge and experience in other ways. An assignment in pediatrics was found to be part of at least two straight medical programs, and an assignment in gynecology a part of several straight surgical internships. But there are other equally appropriate experiences which might be added to various straight programs. The medical intern whose student experience was weak in surgery—and there were some—may need and desire an assignment on a general surgical service. Most straight medical internships provide little instruction in gynecology and could well afford to include an assignment to this service. Surgical internships would not be harmed by providing sufficient time on a medical service to enable the intern to learn the medical therapy of some of the commoner medical complications seen in surgical patients. The pediatric intern is in an excellent position to appreciate seeing adult patients who illustrate the late results of childhood disorders. Whatever spark of intellectual curiosity appears in

an intern should be fanned to a flame, not smothered by a schedule, or the necessity to provide "coverage."

### 3. ADDITIONAL COMMENTS AND RECOMMENDATIONS

*Counseling of students regarding internships.*—Clearly, a greater effort is needed in this area. Specific faculty members from each department, who are genuinely interested in this matter, should be designated to advise students on the selection of internships. These men should have the opportunity to get to know the students whom they are to advise, and must be willing to devote time and effort to learning something of the internships which they recommend. It is patently impossible for one individual to become familiar with the details of all programs about which the student will seek information, but he should be able to direct the student to reliable sources. Certainly, he should never recommend a program about which he knows little.

We believe it is important that the faculty advisors be capable of evaluating a student's potential while keeping an open mind about what internship may be "best" for him. Counseling in this matter is not synonymous with telling a student what internship he should take, and students rightfully resent this. It does mean helping the student to obtain and evaluate information and pointing out to him the favorable and unfavorable features of each program which he may have overlooked. Not all faculty members have the interest, patience, and facility for this endeavor, hence those chosen for it should be carefully selected. Whether those selected act as a formal committee or as independent, departmental advisors, is probably unimportant as long as their efforts are not contradictory, as they often are at present. In their zeal to recruit good men into

their own specialty, some "advisors" have been known to urge students to follow a particular course with utter disregard for the student's own desires in the matter.

*Attitude of the senior staff.*—The importance of the attitude of the senior staff men toward the intern must not be underestimated. For better or for worse, it has a powerful influence at the intern level. The Columbia group<sup>12</sup> asked their interns to "think for a moment of the man in this hospital whom you admire most as a physician." Seventy-six per cent of their respondents identified either the chief of a service or another senior staff man. One of the questions asked how much influence this man had had on the intern. The response to this question indicated that 81 per cent of interns felt he had had a significant influence on their management of patients, and 93 per cent indicated that he had had a significant influence on their standard of medical care.

Hospital policies reflect staff attitudes, sometimes in an unexpected way. For example, the house staff manuals given to interns on arrival often contain important information, and it is regrettable that interns do not read them more thoroughly. On the other hand, some of these manuals go into such great detail on the management of patients with specific disorders, that they equal or surpass the standard textbooks. For example, one manual presented such a categorical method of treating patients with peptic ulcer that upon reading it, an observer could not refrain from commenting that either this hospital must have been singularly unfortunate in the caliber of interns it had attracted or

<sup>12</sup> Bureau of Applied Social Research, Columbia University; based on a study of members of the 1958 class from Cornell, Pennsylvania, and Western Reserve, during their internship in 1958-1959.

that those who wrote the manual either had a particularly closed mind on the management of uncomplicated peptic ulcer or were more concerned with indoctrinating interns than educating them.

By citing a minor point we do not wish to imply that such trivialities are all-important in an internship. They are, however, a distinct indication of the attitude of the senior staff toward the house staff, and it is our conviction that this attitude is one of the most important single factors in determining whether an internship is "good" or "mediocre."

One more reference to private services is appropriate. That certain of these were not ideal assignments for interns was not a discovery of this study, but was, indeed, acknowledged to the study director by the hospital staff. Why, then, does an institution dedicated to higher education continue to assign interns to these services? In some instances it is primarily because of subtle pressures. These pressures may come from medically prominent members of the staff whose chief interest in the university is the excellent care it provides their patients and the prestige derived from holding a staff appointment. Sometimes the pressures come from the community as a result of the activities and interests of prominent laymen. To a large extent they may be financial, since the income from private services in some hospitals may largely offset the loss incurred in caring for public patients. Some administrators and medical staff feel that the service which interns render on the private floors is justifiable on the ground that it partially subsidizes their more satisfactory experience on the public wards. We do not deny the magnitude of the problem such pressures create. Unfortunately, the reasoning by which these

situations are justified can be extended to cover considerable exploitation of the intern, and until university hospitals take appropriate steps to correct them they cannot afford to be unduly critical of those community hospitals which are struggling with the same problems.

This is not meant as an indictment of physicians on the part-time and volunteer staff of medical schools. Many of these men are among the most talented and dedicated of our teachers. The criticism is rather meant to suggest that department heads who are also chiefs of clinical services should have the authority and support necessary to require that all university hospital staff members do their fair share of teaching at the intern level and to prevent the inconsiderate from exploiting interns.

From the preceding comments, it should be apparent that this committee can offer no precise formula for developing an ideal attitude for the senior staff to adopt towards the house staff. We recognize that the amount of authority and responsibility delegated to the interns and residents on any given service is the prerogative of the chief of that service. Obviously, such a policy is essential, and nothing in this report should be interpreted to the contrary. In the course of the study, individual services were noted to be what some interns termed "rather spastic." Others in the same specialty operated on a more informal basis. Each was geared to the philosophy of the chief of the service, who carried the major responsibility for it. We support the point of view that the chief of each service should organize the house staff of his department according to the dictates of his own conscience and his medical experience and should delegate to them only that amount of authority which he deems appropriate.

We who are teachers should recall our own house staff experiences which



we believe made an invaluable contribution to our abilities as physicians. Many of us would stress the importance of being allowed the opportunity to take responsibility and to make decisions regarding the patients under our care. Was it not in this way that we learned to appreciate the magnitude of our job and developed the maturity of judgment that taught us when to ask for help? If so, do we not have an obligation to preserve for today's interns those features of our own internships which gave them meaning?

*Out-patient clinics.*—If the internship is no longer considered an end in itself, but part of a longer program, then the question of including or omitting an out-patient assignment during this first year becomes less troublesome. However, two recommendations pertaining to it are made. First, if an out-patient assignment is included, it should be done in such a way as to permit the long-term observation of a few patients rather than providing vignettes from the medical histories of many. Second, it should not be done for the purpose of providing ambulatory medical care to a host of the medically indigent without regard for the value of the experience of the intern. The intern should not be expected to see a larger number of patients in a given period of time than his more experienced and efficient teachers would think of seeing in their private offices.

*Intern-student relationship.*—The results of these observations do not provide strong support for the fears and concern of the faculties regarding this point. In retrospect, it would seem that the major concern was expressed by the staffs of those hospitals offering rotating internships, where the activities of fourth-year clinical clerks and interns may, indeed, overlap. We believe that the modifications of the intern year sug-

gested in this report will go far toward making the difference between senior student and intern quite evident. The intern should be much busier than the student, have a great deal more responsibility for patient care, participate in teaching students, and above all, be treated as the physician that he is rather than as an undergraduate student.

*Role of hospital administrators.*—For many years it has seemed to the study director that lack of communication and understanding, failure to cooperate, and, on occasion, the open hostility which is permitted to develop between hospital administrators and the medical staff, is totally inexcusable among men of education and mature judgment. It is not difficult to find examples of the harm that can result from these shortcomings. A previous section presented only briefly some of the difficulties that have arisen between interns and the administrative staff of their hospitals.

Whereas the responsibility for this situation does not, by any means, lie entirely with administrators, it is important to indicate ways in which we believe they can make a substantial contribution to promoting better graduate medical education.

1. Besides being competent in business matters, it is essential that they be sympathetic to the purposes of graduate programs. Whatever else a major teaching hospital may represent to its community does not alter the fact that if it purports to offer a first-rate educational program, the efforts of both administrators and medical staff will be required.

2. This will require that administrators have some first-hand knowledge of what such a program entails, for there is no denying that the whole internal milieu of a teaching hospital is different from that of its nonteaching counterpart. Administrators of major teaching



hospitals should therefore be flexible in their concepts of how such an institution should be operated.

3. Mechanisms must be developed for providing some contact between house staff and administrators under conditions favorable to the development of a feeling of mutual respect. Interns must know that administrators are sincerely interested in their welfare and education and do not look upon them as "cheap labor."

4. Hospital policies with which interns are concerned must be clearly spelled out, and interns must be made fully aware of them. In this respect, it is imperative that the departmental chairmen cooperate to see that interns familiarize themselves with hospital policies. Failure to do so invites misunderstanding between house staff and administrative staff and sharply increases the hazard of public criticism, or even legal action against the hospital and its staff.

5. Administrators must not look upon the expense of a teaching program as an attempt by the medical staff to ruin their reputations as competent managers. Everyone concerned stands to gain from a successfully operated graduate education program. It is, therefore, to the advantage of all to have the administrators take the lead in devising ways to obtain the financial assistance required to support necessary programs. By the same token, departmental chairmen should make their requests reasonable and should be able to show that they are indeed in the best interests of the hospital, the community, and the house staff.

Many additional items could be added to such a list, but the essence of all of them would be the necessity for improved communication, understanding, and cooperation between professional staff and administration.

*Place of the municipal hospital in*

*graduate medical education.*—Additional comment is in order concerning those major teaching hospitals which are also city or county hospitals. It is our feeling that those municipal hospitals of the country which participated in this study are fine examples of the tremendous potential for undergraduate and graduate medical education which exists in our large population centers. We feel, however, that in some instances the educational potential of these institutions is not being fully utilized, either because the medical school lacks money, or because the government involved has failed to provide the funds necessary to develop these institutions as great centers of medical education. It was our observation that in those communities where an enlightened and progressive leadership has provided the funds necessary for its municipal hospital to become one of the major teaching hospitals of a medical school, the learning opportunities at all levels of medical education can be superb.

Again, the problem is germane to the immediate future, inasmuch as the need for physicians in the United States in the next two decades has been shown to be considerably greater than the number now being educated. To meet the anticipated need for graduate education of an increasing number of physicians, it will be important to make better use of the existing potential in municipal hospitals which are already an integral part of a medical school program. This can be done, in some instances, by making the graduate program educationally more attractive. When this is done a substantially greater number of men can be expected to seek appointments to the house staff, and in some hospitals the volume of patients would justify appointing more men than the hospital now seeks. To make the programs sufficiently attractive, how-

ever, may require one or more of the following: (a) greater voice in determining hospital policy by the medical school faculty; (b) improving physical facilities; (c) appointment by the medical school of a larger full-time teaching staff to the hospital; (d) increasing the number and quality of ancillary personnel; (e) acceptance by the local government of the principle that the money required to support an excellent program of graduate medical education can be justified by its value to the community in maintaining health and improving medical care; (f) greater financial support by local government, recognizing that operating costs in these hospitals exceed those for custodial care.

#### 4. RECOMMENDATIONS BY SPECIALTY

*Internal medicine.*—Medical services, in general, were rated most favorably by interns, whatever parameter was used. However, there is still considerable room for improvement. For example, most hospitals having interns on private medical floors need to re-evaluate the intern's place on these services in the light of the findings of this study. Unfortunately, the record of the medical service in this regard is not appreciably better than that of the other specialties. Many individual floors have many of the faults which have been mentioned previously regarding private services generally.

While the teaching effort in medicine is good, it was apparent from the hospital visits that additional care in the selection of the rounding staff could improve the situation considerably. And even on the medical service there are dull, uninteresting conferences, perhaps partially because too much is expected of a few persons in the department. Even a brilliant teacher can become jaded if the demands on his time and ability become excessive. Broadening the base of the teaching staff to require

every man in the department—full-time, part-time, or volunteer—to justify his appointment by active, thoughtful participation in the teaching activities should help in many ways.

In a sense, because of the large percentage of its interns who are going into other fields, internal medicine has a greater obligation than other specialties to look to the quality and nature of its graduate teaching. Many faculty members of all departments, as well as interns and students, look to this specialty for a disproportionately large share of the teaching of basic medical principles, fundamentals of medical care, and the application of the basic sciences to diagnosis and treatment of disease. In view of the fact that these departments are expected to accomplish this with the 42 per cent of straight medical interns and 81 per cent of rotating interns who plan careers in fields other than internal medicine, the magnitude of the job is impressive.

The study observers find sound reason for having all interns spend a large portion of their time on the medical service, but also stress the necessity for individualizing each man's experience to meet his anticipated needs as much as possible. The intern who plans to be a thoracic surgeon should be able to profit as greatly from an assignment to a medical "chest service" as from one conducted by the surgical service. The future orthopedic surgeon should benefit from time spent seeing arthritis patients on the medical service; and next year's obstetrical resident should have considerable ability to diagnose accurately the commoner anemias and to treat ambulatory patients with diabetes, since these are often seen on obstetrical and gynecological services.

In summary, then, whereas most medical services are doing a very creditable job with intern education, particularly

for those who plan to become internists, nevertheless the task is large and constant vigilance and attention are required to maintain the high standards of the past. It is entirely likely that future demands will challenge the abilities of the most ingenious of internists to make worth-while contributions to the programs of those going into every conceivable branch of medical science.

*Obstetrics and gynecology.*—In contrast to the comment about internal medicine, this study has been most critical of the specialties of obstetrics and gynecology. The data provided would seem to be ample justification for this attitude.

The most urgent need is for a total re-evaluation of the objectives of these departments in intern education. Only when this has been accomplished can it be expected that the intern experience will be satisfactory. To enable a man simply to develop a moderate ability to perform uncomplicated deliveries is not an acceptable goal, when this procedure is performed in many areas of the world by midwives. We heartily agree with those departmental chairmen who stated that more than this is required to attract enough outstanding men into the field. Yet the observations made by this study were that it is the exceptional obstetrical service which achieves more than this in its allotted time of a 12-month rotating internship.

Several departmental chairmen pointed out to the observers the many problems related to gestation, mechanisms of delivery, endocrinology, neonatal disease and mortality, genetics, and the puerperium in which research is lagging. Before these can be attacked, it is necessary to stimulate interest in them and to recruit a greater number of qualified investigators into the field. This, in turn, would seem to require more interest and effort directed at the interns. It was shown that only 7 per cent of

the interns of this study plan to enter obstetrics and gynecology. While these men were considerably better satisfied with the teaching in this field than were those going into other fields, this does not alter the fact that to the observers the teaching on many obstetrical services suffered from: (a) inadequate time with the intern; (b) an acute and chronic lack of able and interested teachers and investigators; (c) enormous service demands which far exceeded the educational needs of the departments; (d) an inadequate concept of purpose in intern education; and, as a result of these difficulties; (e) too much concentration on the purely mechanical aspects of obstetrics.

As to gynecology, it has already been made clear that this was the most disappointing assignment of most rotating internships. All the comments made above apply equally to gynecology, with the addition of the following: (a) because of the essential nature of an adequate gynecological examination, the intern is not at liberty to make independent examinations of the patients on most gynecological services. On some, he was limited to a pelvic examination with the patient under anesthesia, and on others he was actually discouraged from doing even these. (b) Because it is difficult for several persons to see what is taking place in some gynecological operations, interns often profited little from scrubbing on them. However, whether they were required to be present, or discouraged from doing so, they were still expected to carry out such duties as drawing blood for the laboratory, filling out all forms for the record, completing all requisitions for special procedures, and starting intravenous infusions. (c) While the situation was bad enough with regard to public patients, it was considerably worse on some private gynecological services.

We therefore recommend that departments of obstetrics and gynecology undertake an immediate self-study with the purpose of facing these problems squarely and frankly, and determining what immediate and long-range measures are required to make it possible for interns to have a worth-while educational experience on these services. We believe that it is entirely possible for this to be accomplished if the seven-point philosophy advocated herein is applied, along with the other more specific recommendations which are applicable to these specialties. However the need is urgent, for an unhealthy attitude toward these services prevails among senior medical students and interns. This is particularly unfortunate when the number of full-time faculty members in this field is so small and when new schools are being planned which will require staffing.

*Pediatrics.*—The intern experience in pediatrics compared very favorably with that in internal medicine on certain points, and, in general, it surpassed the medical service in its ability to utilize its private patients for teaching purposes. Perhaps the greatest single weakness of this specialty is one of confusion as to precisely what pediatrics should be trying to accomplish at the graduate level. This problem remains troublesome in spite of much time and effort spent by pediatricians in trying to solve it. The conflict becomes most acute in the rotating internship for, unlike services in internal medicine, those in pediatrics usually have the rotating interns for a very brief period of time. Under these conditions, the service suffers from some of the frustrations encountered by obstetrics, gynecology, and the subspecialties of surgery. Unable to teach an intern an adequate amount of pediatrics in 8 weeks, some departments give a stereotyped experience aimed at teaching

him two or three basic principles (e.g., how to approach a sick child without frightening him; what cardinal signs and symptoms to look for in the acutely ill infant) and hope that he will at least learn to recognize when he needs a pediatrician to consult on his patients.

Basically, we believe that the organization of pediatric services lends itself fully as well to successful intern teaching as does that of internal medicine. The recommendations, however, differ in one major respect. Pediatric services, like obstetrics and gynecology, must: (a) decide what the major objectives of the intern program are; (b) devise well defined ways of achieving these; (c) determine what appropriate time is required for the average intern to obtain these goals; and (d) insist upon an intern rotation which makes it possible to carry out such a program.

*Surgery and the surgical specialties.*—The experience on surgery is educationally and emotionally only slightly more satisfying to the intern than that on gynecology. The great problem here, however, seems to be overemphasis on the technical aspects of the discipline. Some services seem to have lost sight of the fact that surgery is essentially but one of many approaches to therapy. The disorders seen in the patients of this specialty are (within certain limitations) the same ones seen by internists and pediatricians. If the medical service can find much of interest to teach students and house staff about cholecystitis and peptic ulcer, why should not the attending staff in surgery—who carry the therapy one step further—do this even better? The etiologic factors and the pathologic lesions produced are the same on both services, hence the opportunity to teach, the challenge to the physician's ability, and surely the interest of the intern in learning, are fully as great on the surgical service as on

the medical service. And yet, time and again, we attended surgical rounds in which the discussion dealt almost exclusively with whether all the usual pre-operative tests had been done, whether the patient was "ready for surgery," and what type of procedure was planned. Seldom did it deal with the natural history of disease or patho-physiologic mechanisms. Rounds on postoperative patients were usually quite cursory unless a patient had developed a complication. In that case, the discussion centered on the management of this patient's particular complication, rather than on the causes and possible prevention of such difficulties generally.

When pressed as to why this was the way rounds were conducted, residents and attending surgeons usually responded that there was not enough time for anything more. To this, some added that, anyway, most of the teaching took place in the operating room. In these explanations lie what we believe to be the heart of the problem of teaching students and interns on surgical services. By all the evidence we could obtain, many surgeons are too busy, too little interested, and too much oriented to the technical, to do a satisfactory job of teaching. The bitterness and disappointment expressed by many interns—and residents in reflecting on their own internships—were usually directed at the discrepancy between the tremendous potential for teaching on surgical services, and what actually took place.

Further evidence of the emphasis on the operation itself, and of a startling lack of pedagogical perception among many surgeons, was the attitude that permitted the intern to perform certain operations as a reward for faithful service. As the chief educational officer of one hospital (and a surgeon) put it, "If the interns will write their progress notes, and get to the operating room on

time, they will be given something to do." Surely an operative procedure is not something to be handed out as a favor to those who are willing to submit without protest to an endless burden of tiresome chores. Either it has an appropriate place in the intern's education at that point, or it does not. It may not always be wise to leave it to a resident to decide this.<sup>13</sup> We would be the last to deny the necessity for disciplined behavior and rigid adherence to established principles of asepsis and hemostasis in a specialty where the life of a patient may be precariously balanced in the hands of the physician. However, we are not convinced that concern with the technical aspects of surgery should be such an overwhelming obsession that interns cannot be taught the many things they need to know before they are given the privilege of operating.

We believe that surgical services have much to offer a man in his first year out of medical school. We offer the following suggestions for consideration:

1. Redefine the goals of intern education in surgery.
2. Outline a program of sufficient length to make these goals achievable.
3. As some surgeons have suggested before us, relieve the intern of as many chores as can be performed by nonphysicians (e.g., technicians to draw blood for the laboratory and start intravenous infusions; operating room technicians to hold retractors; ward aides to run errands; dictating equipment and typists to reduce time spent in writing, etc.).
4. Utilize some of the time thus gained for more contact between the intern and senior staff; devote more time to bedside teaching.
5. Add to the staff more surgeons who are capable teachers and interested in intern education, and make it financially

<sup>13</sup> See footnote, Chapter VII.



possible for them to take the time to teach.

6. By deed, as well as word, indicate to the intern that there is much to be learned in surgery outside the operating room.

7. As for all other services, we urge appropriate application of the seven-point philosophy outlined earlier.

#### 5. ECONOMIC PROBLEMS OF GRADUATE MEDICAL PROGRAMS

This study sought no information concerning the magnitude of the cost or manner of financing the intern-residency programs of the hospitals participating in the study. While we were greatly interested in the problem, it did not fall properly within the scope of this endeavor. It was considered pertinent, however, to consider what a proper basis for establishing the amount of interns' stipends would be.

While we advocate that the intern be recognized as a physician and accorded proper respect, neither the committee nor the students, interns, and senior staff interviewed felt it proper to pay an intern a salary commensurate with the service he performs. All parties concerned recognized that the greater part of the intern's compensation should come in the form of education. On the other hand, certain basic changes have occurred in the socio-economic structure of our entire society since World War II and these must be recognized. Among them are:

1. A high percentage of interns are now married. (A wistful yearning by the senior staff for the days of unmarried house staff is not going to alter this situation.)

2. In an era of general prosperity, neither the intern nor his family and friends can understand why the activities of a man with a doctorate should not merit at least a subsistence income. It is humiliating and degrading for any

physician to receive a stipend that is only slightly better or less than that paid the least educated hospital employee.

3. Failure to provide this merely compounds the problems of an intern by prolonging his years of economic dependency and, for those without independent incomes, by generating great distracting pressures.

4. It further increases the total cost to the individual of a medical education and is often cited by college students as a major deterrent to the study of medicine.

5. Failure to establish a uniform basis for determining the stipend of interns in all hospitals has resulted in an undesirable situation in which some hospitals attempt to attract interns by outbidding their sister institutions in terms of stipend.

We believe the majority of those interviewed would find quite acceptable the following recommendation; that all major teaching hospitals associated with medical colleges offer interns a "cost of living stipend" based on local conditions but with comparable minimum and maximum limits. This would permit the intern to consider all internships solely on their educational merit, would avoid competition among university hospitals based on stipend, and would assure the student in debt that wherever he interned he would not normally incur further debt in the completion of his medical education.

There is ample justification for such a policy. Greater recognition needs to be given the fact that every patient in a hospital must have a physician. The intern is one of a team of physicians rendering a great deal of service to the sick. Any who doubt this point need only ask themselves on what other basis there could be an "intern shortage." In the light of recent publicity



on this matter, the public and local governments are coming to look upon the intern as an exploited individual. We who hold ourselves responsible for the highest standards of education and practice, must see to it that in our own hospitals this is not the case.

It would seem to us entirely proper for medical educators, hospital administrators, boards of trustees of hospitals, private physicians, and representatives of insurance programs and local medical societies, to unite in devising the means of financing these programs. We believe it can be done without violating the ethics of the profession and that it is in the best interests of our nation's health resources to do so.

#### REFERENCES

1. American Medical Association. A History of the Council on Medical Education and Hospitals of the A.M.A. 1959.
2. Council on Medical Education and Hospitals of the A.M.A. Essentials of An

Approved Internship. (Revised to October 1, 1957).

3. CURRAN, J. A. Internships and Residencies in New York City, 1934-1937, New York: The Commonwealth Fund, 1938.
4. DEITRICK, J. E., and BERSON, R. C. Medical Schools in the United States at Mid-Century, New York: McGraw-Hill Book Co., Inc., 1953.
5. PAYSON, H. E., *et al.* The Time Study of an Internship on a University Medical Service. *New Eng. J. Med.*, **264**:439, 1961.
6. MILLER, J. R. Address of the President. *J. M. Educ.*, **25**:1, 1950.
7. PULLEN, R. L. The Internship. American Lecture Series, Springfield, Ill.: Charles C Thomas, 1952.
8. Report of the Advisory Committee on Internships to the Council on Medical Education and Hospitals of the A.M.A. *J.A.M.A.*, February 7, 1953.
9. YOUNG, J. B. Making the Internship a Planned Educational Experience. *J. M. Educ.*, **25**:21, 1950.

#### APPENDIX

Association of American Medical Colleges 2530 Ridge Ave., Evanston, Ill.

#### INTERNSHIP STUDY

##### General Information

1. The objectives of this Study are outlined in the accompanying letter.
2. Instructions for answering questionnaires are given on page 1.
3. TO MAIL COMPLETED QUESTIONNAIRE: Open out Business Reply flap of back cover; moisten gummed edge of flap; seal flap along line on the left. No postage or envelope needed.

## INSTRUCTIONS

1. Please read the instructions for each question before answering it. Most require only a checkmark.
2. Note that ROTATING INTERNS and MIXED INTERNS answer for each major service you have completed. STRAIGHT INTERNS answer only for your specialty.
3. Answers provided may not always reflect your exact opinion. Check the one which comes closest to your own feeling. If it is necessary to modify your answer, do so in the margin.
4. The small numbers next to the answer boxes and in the margins have been placed there to increase the reliability of processing. Just disregard them.
5. The information you provide will be tabulated by our office and published only in the form of statistical summaries. Your individual identity will not be revealed in any way.

1. Name\* \_\_\_\_\_

2. Sex: Male ☐ Female ☐ Marital status: Single ☐ Married ☐ Other ☐  
Number of children \_\_\_\_\_ Age of oldest child \_\_\_\_\_

3. Is your wife (husband) employed?

IF YES: Employed full-time ☐ Part-time ☐

4. Graduate of \_\_\_\_\_ Medical School.

5. Year of graduation \_\_\_\_\_

6. Name of hospital in which you are interning:

\_\_\_\_\_  
city state

7. How is your internship classified?

Rotating ..... ☐  
Rotating, with major emphasis ..... ☐  
Mixed ..... ☐  
Mixed, with major emphasis ..... ☐  
Straight ..... ☐

8. Regardless of the above classification, how many weeks do you spend in each of the following specialties?

Internal Medicine ..... weeks  
Obstetrics ..... weeks  
Gynecology ..... weeks  
Pediatrics ..... weeks  
Psychiatry ..... weeks  
Surgery and surgical subspecialties ..... weeks  
"Emergency Room" (accident room, receiving ward, dressing room, etc.) ..... weeks

\*Your name, will be used for subsequent correspondence, if needed. Your answers are considered confidential information and will be published only in the form of statistical summaries.

9. Below are some factors you may have considered in selecting an internship. Indicate how important *each* was in your decision.

## ANSWER FOR EACH FACTOR

	Major Importance	Minor Importance
Medical reputation of the hospital .....	<input type="checkbox"/>	<input type="checkbox"/>
Likelihood of being accepted .....	<input type="checkbox"/>	<input type="checkbox"/>
Stipend .....	<input type="checkbox"/>	<input type="checkbox"/>
Section of country in which hospital is located .....	<input type="checkbox"/>	<input type="checkbox"/>
Size of city in which hospital is located .....	<input type="checkbox"/>	<input type="checkbox"/>
Success hospital has had in obtaining interns through Matching Plan .....	<input type="checkbox"/>	<input type="checkbox"/>
Recommendations of others who have interned there .....	<input type="checkbox"/>	<input type="checkbox"/>
Recommendations of your faculty advisor or Internship Committee .....	<input type="checkbox"/>	<input type="checkbox"/>
Number of ward* patients admitted .....	<input type="checkbox"/>	<input type="checkbox"/>
Amount of routine lab work done by intern .....	<input type="checkbox"/>	<input type="checkbox"/>
Frequency of night duty .....	<input type="checkbox"/>	<input type="checkbox"/>
House staff quarters provided by hospital .....	<input type="checkbox"/>	<input type="checkbox"/>
Opportunity to work closely with senior staff (attending) physicians .....	<input type="checkbox"/>	<input type="checkbox"/>
Morale of members of the house staff .....	<input type="checkbox"/>	<input type="checkbox"/>
Attractiveness of the hospital's residency program .....	<input type="checkbox"/>	<input type="checkbox"/>
Possibility of joining the staff on entering practice .....	<input type="checkbox"/>	<input type="checkbox"/>
IF MARRIED: Wife's preference for the community in which hospital is located .....	<input type="checkbox"/>	<input type="checkbox"/>

10. In reference to the following items (on ward\* patients), insert the appropriate code number in the spaces provided. Answer for each of the indicated specialties to which you have already been assigned.

## CODE #

- (1)—Intern does this himself approximately 75% or more of the time.  
 (2)—Intern does this from 25% to 75% of the time.  
 (3)—Intern only occasionally does this (less than 25% of the time).

## FOR WARD\* PATIENTS ONLY

	Medicine	Pediatrics	Obstetrics	Surgery
Takes admission history .....	_____	_____	_____	_____
Does admission physical exam. ....	_____	_____	_____	_____
Draws blood for admission lab. work .....	_____	_____	_____	_____
Does admission lab. work .....	_____	_____	_____	_____
Does daily blood counts, urines, stool exams, as indicated .....	_____	_____	_____	_____
Carries out procedures such as L.P., paracentesis, thoracentesis .....	_____	_____	_____	_____
Writes progress notes .....	_____	_____	_____	_____
Starts I.V.'s and transfusions .....	_____	_____	_____	_____
Initiates orders on patients .....	_____	_____	_____	_____
Decides when patient is ready to be discharged .....	_____	_____	_____	_____
Requests consultations .....	_____	_____	_____	_____
Talks over case with consultants .....	_____	_____	_____	_____
Talks with patient's family about diagnosis, prognosis, progress, etc .....	_____	_____	_____	_____

\*"Ward patients" = "Staff patients" = "Service patients"

11. In reference to the following items (on *private\** patients), insert the appropriate code number in the spaces provided. Answer for each of the indicated specialties to which you have already been assigned.

## CODE #

(1)—Intern does this himself approximately 75% or more of the time.

(2)—Intern does this from 25% to 75% of the time.

(3)—Intern only occasionally does this (less than 25% of the time).

## FOR PRIVATE\* PATIENTS ONLY

	Medicine	Pediatrics	Obstetrics	Surgery
Takes admission history .....				
Does admission physical exam. ....				
Draws blood for admission lab. work .....				
Does admission lab. work .....				
Does daily blood counts, urines, stool exams, as indicated .....				
Carries out procedures such as L.P., paracentesis, thoracentesis .....				
Writes progress notes .....				
Starts I.V.'s and transfusions .....				
Initiates orders on patients .....				
Decides when patient is ready to be discharged .....				
Requests consultations .....				
Talks over case with consultants .....				
Talks with patient's family about diagnosis, prognosis, progress, etc. ....				

12. Please give your best estimates of the number of times you did the following procedures as a student, and as an intern.

## PLEASE ANSWER FOR EACH PROCEDURE EVEN THOUGH YOU MAY NEVER HAVE DONE IT.

## Approximate Number Times Performed:

	As Student				As Intern			
	0	1-5	6-25	over 25	0	1-5	6-25	over 25
Performed bone marrow aspiration .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Performed sigmoidoscopy .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Passed gastric tube .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Performed lumbar puncture .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Performed thoracentesis .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Performed abdominal paracentesis .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Incised and drained abscess .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sutured laceration .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Performed a closed reduction of fracture .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Applied plaster cast .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Performed pericardial tap .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Made venous cut-down for I.V. therapy .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

\*"Private patient"—any patient with his own private physician, regardless of the type of accommodation patient has in hospital.

- [illegible]

13. How nearly ideal was the *number of times* you performed the following procedures as an intern?

	Number done as intern was:		
	too many	about right	too few
(a) Performed bone marrow aspiration .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Performed sigmoidoscopy .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Passed gastric tube .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Performed lumbar puncture .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Performed thoracentesis .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Performed abdominal paracentesis .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Incised and drained abscess .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sutured lacerations .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Performed a closed reduction of fracture .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Applied plaster cast .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Performed pericardial tap .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Made venous cut-down for I.V. therapy .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Delivered a baby without forceps .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Delivered a baby with forceps .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Performed and repaired an episiotomy .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(b) Regarding the more difficult procedures listed above, or those you were performing for the first time as an intern, was your supervision and instruction—			
CHECK ONE: Excellent? <input type="checkbox"/>			
Good? <input type="checkbox"/>			
Fair? <input type="checkbox"/>			
Inadequate? <input type="checkbox"/>			

14. Have you spent any time on a surgical service as an Intern? ..... Yes ☐  
No ☐

(ALL STRAIGHT SURGICAL AND OTHERS WHO HAVE BEEN ON SURGERY,  
PLEASE ANSWER QUESTIONS #15 AND #16.)

15. Indicate the frequency *per week* of each of the following experiences which you had on surgery and the relative educational value of each:

[illegible]

16. (a) While on surgery, did you have a major role, under supervision, in:

	Never	Once or Twice	3 or more Times
Managing a patient with diabetes through a surgical event? .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Managing a patient in shock? .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The complete work-up of a previously undiagnosed patient, follow through surgical treatment, and until discharged home? .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Managing a patient with massive G.I. bleeding through pre-operative, operative, and post-operative period? .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Managing the fluid balance and electrolyte therapy of a patient with intestinal obstruction? .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- (b) Did you, as an intern:

Perform a herniorrhaphy? .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Perform an appendectomy? .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Perform a cholecystectomy? .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Perform a tracheostomy? .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Perform a T. & A.? .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

17. Indicate whether you feel the following statements, concerning the relationship of medical students to interns, are
- TRUE*
- or
- FALSE*
- as applied to the various services to which you have been assigned.

## ANSWER FOR EACH STATEMENT

	T	F
Having medical students on most services made this a "better teaching internship" than if they had not been present .....	<input type="checkbox"/>	<input type="checkbox"/>
Medical students interfered with the intern's chance to learn by taking procedures away from him .....	<input type="checkbox"/>	<input type="checkbox"/>
Presence of medical students probably didn't affect my learning one way or the other .....	<input type="checkbox"/>	<input type="checkbox"/>
Having medical students around caused me to "read up" more than I might have done otherwise .....	<input type="checkbox"/>	<input type="checkbox"/>
Teaching medical students how to perform certain procedures helped improve my own technique .....	<input type="checkbox"/>	<input type="checkbox"/>
Having to teach medical students took time away from more important things I wanted to do .....	<input type="checkbox"/>	<input type="checkbox"/>
I now believe this internship would be better without students .....	<input type="checkbox"/>	<input type="checkbox"/>

18. The following questions pertain to the relationship of Interns to Residents. "Specialty Residents" and "Research Fellows" refer to those men in special fields, laboratory or services (e.g.—cancer research, "kidney service," cardiology, etc.) whose patient responsibility was limited to selected cases. Otherwise, "resident" refers to all years of the regular residency program with responsibility for entire wards or services.

Please answer for the following specialties to which you have been assigned.

(a) *FOR INTERNAL MEDICINE:*

	Most	About half	Only a few
How many of the resident staff tended to "work as a team" with the intern, sharing the work load? .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How many of the residents tended to take responsibility away from the intern? .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



How many residents were capable and willing to "teach you"? (i.e.—discuss cases, show you how to do procedures, etc.) .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How many residents treated you as someone primarily to do their "scut work"? .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<i>Often</i>	<i>Sometimes</i>	<i>Rarely</i>
How often did "Research Fellows" or "Special Residents" tend to take over the management of patients they saw in consultation? .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How often did consultation by "Research Fellows" or "Special Residents" result in valuable teaching for you? .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## (b) FOR OBSTETRICS-GYNECOLOGY:

	<i>Most</i>	<i>About half</i>	<i>Only a few</i>
How many of the resident staff tended to "work as a team" with the intern, sharing the work load? .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How many of the residents tended to take responsibility away from the intern? .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How many residents were capable and willing to "teach you"? (i.e.—discuss cases, show you how to do procedures, etc.) .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How many residents treated you as someone primarily to do their "scut work"? .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<i>Often</i>	<i>Sometimes</i>	<i>Rarely</i>
How often did "Research Fellows" or "Special Residents" tend to take over the management of patients they saw in consultation? .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How often did consultation by "Research Fellows" or "Special residents" result in valuable teaching for you? ....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## (c) FOR PEDIATRICS:

	<i>Most</i>	<i>About half</i>	<i>Only a few</i>
How many of the resident staff tended to "work as a team" with the intern, sharing the work load? .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How many of the residents tended to take responsibility away from the intern? .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How many residents were capable and willing to "teach you"? (i.e.—discuss cases, show you how to do procedures, etc.) .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How many residents treated you as someone primarily to do their "scut work"? .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<i>Often</i>	<i>Sometimes</i>	<i>Rarely</i>
How often did "Research Fellows" or "Special Residents" tend to take over the management of patients they saw in consultation? .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How often did consultation by "Research Fellows" or "Special Residents" result in valuable teaching for you? .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## (d) FOR SURGERY:

	<i>Most</i>	<i>About half</i>	<i>Only a few</i>
How many of the resident staff tended to "work as a team" with the intern, sharing the work load? .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Is your experience based on an assignment to a service with:

**CHECK ONE:**

	Medicine	Pediatrics	Obstetrics	Surgery
Private patients only? .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Both private and ward* patients at the same time? .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If service included both private and ward\* patients, what was the approximate percentage of private patients?

**Check appropriate figures:**

Over 75% .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
50-75% .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25-50% .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Less than 25% .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

20. With respect to the following teaching activities, please indicate how many times per week each is held, how often you attended, and the relative teaching value of each.

	Number times offered per week	How often did you attend?		When you did attend, was the teaching of	
		Usually	Rarely	considerable value?	little value?
<b>INTERNAL MEDICINE</b>					
Ward rounds with attending physician assigned to your floor .....	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ward rounds with the resident* on your floor .....	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Scheduled conferences, at which both attending staff and house staff are present .....	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lectures by attending staff .....	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
"Grand rounds," "consulting rounds," or similar teaching sessions, directed by the Chief of Service .....	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>OBSTETRICS</b>					
Ward rounds with attending physician assigned to your floor .....	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ward rounds with the resident* on your floor .....	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Scheduled conferences, at which both attending staff and house staff are present .....	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lectures by attending staff .....	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
"Grand rounds," "consulting rounds," or similar teaching sessions directed by the Chief of Service .....	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>PEDIATRICS</b>					
Ward rounds with attending physician assigned to your floor .....	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

\*"Ward patients" = "Staff patients" = "Service patients"

Ward rounds with the resident* on your floor .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Scheduled conferences, at which both attending staff and house staff are present .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lectures by attending staff .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
"Grand rounds," "consulting rounds," or similar teaching sessions directed by the Chief of Service .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**GENERAL SURGERY**

Ward rounds with attending physician assigned to your floor .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ward rounds with the resident* on your floor .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Scheduled conferences, at which both attending staff and house staff are present .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lectures by attending staff .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
"Grand rounds," "consulting rounds," or similar teaching sessions directed by the Chief of Service .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

21. In general, how does your responsibility for ward\* patients, as an intern, compare with the responsibility you had for similar patients during your clinical clerkship as a medical student?

Degree of Responsibility as Intern:	Medicine	Pediatrics	Obstetrics	General Surgery
Much greater .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Somewhat greater .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
About the same .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Less .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

22. Taking each service as a whole, how would you rate your responsibility for the management of the following categories of in-patients during internship?

Rate, according to the scale: 3—a great deal of responsibility  
 2—a moderate degree of responsibility  
 1—very little responsibility  
 0—none at all

Responsibility for:	Medicine		Pediatrics		Obstetrics		General Surgery	
Private patients .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ward* patients .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Medicine		Pediatrics		Obstetrics		Surgery	
	Yes	No	Yes	No	Yes	No	Yes	No
23. Did you work in the Out-Patient Clinic of any specialty on a regularly assigned basis? .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

\*"Resident" includes all years of graduate training beyond internship.

\*\*"Ward patients" = "Staff patients" = "Service patients"

## IF NO:

Were you supposed to work in O.P.C. while having a simultaneous in-patient assignment, and then too busy to get there? ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Did you work in O.P.C. only occasionally, on an irregular basis? ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

PLEASE ANSWER THE REMAINDER OF THIS QUESTION AND QUESTION #24 FOR ANY OUT-PATIENT CLINIC IN WHICH YOU COMPLETED A REGULAR ASSIGNMENT.

	Medicine		Pediatrics		Obstetrics		Surgery	
	Yes	No	Yes	No	Yes	No	Yes	No
Was a Social Service worker available to you for assistance with out-patients? .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did the intern who saw these patients in O.P.C. also take care of them in the hospital if they were admitted? .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did you see some patients you had previously discharged from the hospital? .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Was your O.P.C. experience—								
A continuous block of time? ....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Scattered throughout the year? .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Would you have preferred more time in Out-Patient Clinic? .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## 24. How long was an average clinic period?

(in hours)

During an average clinic period, how many patients in the following categories did you see on the average?

New patients requiring complete work-up?

	Medicine	Obstetrics	Pediatrics	Surgery
None .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1 or 2 .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3-5 .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5-10 .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10 or more .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Was this number—

Excessive? .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Adequate? .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inadequate? .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Old patients for follow-up visits:

Less than 5 .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5-10 .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10-15 .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
More than 15 .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Was this number—

Excessive? .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Adequate? .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inadequate? .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Who most often supervised your work in O.P.C.?:

No one .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Resident staff .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Junior attendings .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Senior attendings .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

25. Have you worked in the Emergency Department\* on a regularly assigned basis yet? Yes No  
☐ ☐  
 If not, will you be assigned there during your internship? ☐ ☐

26. Answer this question *only if you have already worked in the Emergency Department.*<sup>\*</sup>

- (a) Was your assignment in the Emergency Department\*— Yes No  
 Simultaneous with some other assignment?..... ☐ ☐  
 A separate block of time? .....

Nights as well as days? .....

☐ ☐

- (b) If yours is a Rotating or Mixed Internship:

Was your E.D. assignment considered part of your—

"Surgical" experience? .....

☐ ☐

"Medical" experience? .....

☐ ☐

- (c) Was the patient load adequate to justify your time in E.D. .... ☐ ☐

Was the patient load excessive so that you felt hurried and unable to do your best work? .....

☐ ☐

Was the E.D. well organized, so there was a minimum of confusion and excitement when caring for patients? .....

☐ ☐

Were there usually enough ancillary personnel available? (nurses, orderlies, etc.) .....

☐ ☐

Did you have adequate opportunity to follow-up on patients you admitted from E.D.? .....

☐ ☐

- |   | Medicine                 |                          | Obstetrics               |                          | Pediatrics               |                          | Surgery                  |                          |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|   | Yes                      | No                       | Yes                      | No                       | Yes                      | No                       | Yes                      | No                       |
| (d) When seeing patients who would obviously "belong" to one of the specialties, was it required that a member of the resident staff pass on your judgment before final disposition (to admit, discharge, treat, etc.) could be made? ..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Were there attending physicians regularly assigned to "cover" the E.D. house staff? .....

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

\*Emergency Department is used in its broadest sense, and includes accident room, dressing room, accident ward, emergency ward, etc.



## IF YES:

Check appropriate boxes

Did these attending physicians  
come to the E.D. and give the  
intern instruction—

## On ward† patients?

Usually .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sometimes .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Seldom .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Never .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## On private patients?

Usually .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sometimes .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Seldom .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Never .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Would you have preferred more  
E.D. supervision—

By attending? .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
By residents? .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

27. For each of the following questions, please answer *Yes* or *No* for each specialty you have been assigned to as an intern.

	Medicine		Obstetrics		Pediatrics		Surgery	
	Yes	No	Yes	No	Yes	No	Yes	No
When you began your assignment on this specialty, was it made clear to you just what the intern's role was? .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did you feel that the intern's assignments were determined <i>primarily</i> by a need to provide "service" to patients? .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Was it known to the house staff that this specialty had organized its intern-residency program with specific objectives in mind? .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is this specialty known as a "students' service"? .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It is known as a "residents' service"? .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did you feel that this specialty exerted a strong effort toward making the intern's experience a valuable one? .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is this specialty generally regarded as having a "stimulating" teaching staff? .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How stimulating <i>did you find</i> the teaching by this specialty to be:								
Very stimulating? .....	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	
Not very stimulating? .....	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	

† "Ward patients" = "Staff patients" = "Service patients"

28. Please answer the following questions "yes" or "no."

	Yes	No
Does your internship include an in-patient assignment on Psychiatry?	<input type="checkbox"/>	<input type="checkbox"/>
Is this an elective assignment?	<input type="checkbox"/>	<input type="checkbox"/>
Does your hospital have a psychiatric out-patient clinic?	<input type="checkbox"/>	<input type="checkbox"/>
Does the intern have an opportunity to work in this clinic?	<input type="checkbox"/>	<input type="checkbox"/>
Do you think it would be a good idea to offer all interns the opportunity to elect an assignment on Psychiatry?	<input type="checkbox"/>	<input type="checkbox"/>

ANSWER QUESTION #29 ONLY IF YOU HAVE BEEN ON PSYCHIATRY.

29. (a) On this service, how much responsibility did you have for each of the following duties on ward\* patients:

	Much	Little
Taking admission history	<input type="checkbox"/>	<input type="checkbox"/>
Doing admission physical exam.	<input type="checkbox"/>	<input type="checkbox"/>
Drawing blood for lab.	<input type="checkbox"/>	<input type="checkbox"/>
Doing lab. work (CBC, urines)	<input type="checkbox"/>	<input type="checkbox"/>
Doing procedures (e.g., L.P., starting I.V.'s, etc.)	<input type="checkbox"/>	<input type="checkbox"/>
Writing progress notes	<input type="checkbox"/>	<input type="checkbox"/>
Giving electroshock therapy	<input type="checkbox"/>	<input type="checkbox"/>
Initiating orders	<input type="checkbox"/>	<input type="checkbox"/>
Requesting consultations	<input type="checkbox"/>	<input type="checkbox"/>
Discussing case with consultations	<input type="checkbox"/>	<input type="checkbox"/>
Deciding when patient is ready for discharge	<input type="checkbox"/>	<input type="checkbox"/>
Talking with patient's family about diagnosis, prognosis, progress, etc.	<input type="checkbox"/>	<input type="checkbox"/>
Management of non-psychiatric aspects of patient's illness (diabetes, heart failure, etc.)	<input type="checkbox"/>	<input type="checkbox"/>

(b) What was the percentage of ward\* patients on Psychiatry?

CHECK ONE: Practically all ward* patients	<input type="checkbox"/>
About 75%	<input type="checkbox"/>
About 50%	<input type="checkbox"/>
About 25%	<input type="checkbox"/>
Practically all private	<input type="checkbox"/>

(c) Indicate the relative amount of responsibility you had for psychiatric patients.

	Private Psych. Patients	Ward* Psych. Patients
Great deal of responsibility	<input type="checkbox"/>	<input type="checkbox"/>
Moderate amount of responsibility	<input type="checkbox"/>	<input type="checkbox"/>
Very little responsibility	<input type="checkbox"/>	<input type="checkbox"/>
None at all	<input type="checkbox"/>	<input type="checkbox"/>

(d) Indicate which of the following teaching activities were available to you on Psychiatry, and the relative value of each

	Not available	Of much value	Of little value
Rounds with attending psychiatrists	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rounds with psychiatry residents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Scheduled departmental conferences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

\*"Ward patients" = "Staff patients" = "Service patients"

- Observing psychiatrist working with individual patients ..... ☐ ☐ ☐
- Having opportunity to go into a patient's problem, then discussing it with resident and senior staff ..... ☐ ☐ ☐

30. Please indicate whether you were, or were not, satisfied with your internship in regard to the following points:

	Satisfied	Not satisfied
Number of ward* patients admitted .....	<input type="checkbox"/>	<input type="checkbox"/>
Amount of routine lab. work done by intern .....	<input type="checkbox"/>	<input type="checkbox"/>
Frequency of night duty .....	<input type="checkbox"/>	<input type="checkbox"/>
House staff quarters provided for you by the hospital .....	<input type="checkbox"/>	<input type="checkbox"/>
Opportunity to work closely with the senior (attending) staff .....	<input type="checkbox"/>	<input type="checkbox"/>
Morale of house staff .....	<input type="checkbox"/>	<input type="checkbox"/>
Attractiveness of the hospital's residency program .....	<input type="checkbox"/>	<input type="checkbox"/>

**IF MARRIED:**

Living accommodations available for your family *near the hospital* ..... ☐ ☐

31. How much opportunity have you had to become familiar with the problems of hospital administration?

- |  | Yes                      | No                       |
|--|--------------------------|--------------------------|
| (a) Have you had personal contact with the administrator or some of his assistants? .....  | <input type="checkbox"/> | <input type="checkbox"/> |
| Have you, by lectures, conferences or other means, learned something of:   |                          |                          |
| The role of the hospital administrator? .....  | <input type="checkbox"/> | <input type="checkbox"/> |
| The business side of running a hospital? .....   | <input type="checkbox"/> | <input type="checkbox"/> |
| The relationship of the medical staff to administration and board of trustees? .....   | <input type="checkbox"/> | <input type="checkbox"/> |
| Are you familiar with the actual cost to the patient of some medications, lab. tests, and x-rays in your hospital? .....   | <input type="checkbox"/> | <input type="checkbox"/> |
| On the basis of your experience to date, do you feel you probably could make an informed judgment on a problem involving hospital administration and medical staff in your hospital? ..... | <input type="checkbox"/> | <input type="checkbox"/> |
| Do you feel it would be valuable to you in practice if you had some opportunity during a <i>residency</i> to learn more of this side of medicine? .....                                    | <input type="checkbox"/> | <input type="checkbox"/> |
| (b) Would you give your evaluation of the administrative department of your hospital on the following points:  |                          |                          |
| Does the administration seem interested in problems that arise involving house staff? (e.g.—satisfactory living conditions, stipend, providing necessary equipment) .....                  | <input type="checkbox"/> | <input type="checkbox"/> |
| Is the administration sufficiently aware of the house staff needs to solve these problems competently? .....   | <input type="checkbox"/> | <input type="checkbox"/> |
| (c) Has there been any specific difficulty between the <i>house staff</i> and administration in your hospital this year? .....   | <input type="checkbox"/> | <input type="checkbox"/> |

Specify: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\*"Ward patients" = "Staff patients" = "Service patients"

32. We would like you to give us your personal evaluation of your senior (4th) year in medical school.

(a) Did you have most of your clinical clerkships in patient assignment in your—

Third year? ☐

Fourth year? ☐

(b) Are the following statements *TRUE* or *FALSE* as applied to *your own* experience?

**ANSWER FOR EACH**

	True	False
This was, in general, a more valuable year than my third year....	<input type="checkbox"/>	<input type="checkbox"/>
My fourth year was a real "let-down" after the third year experience .....	<input type="checkbox"/>	<input type="checkbox"/>
We didn't get much teaching in the fourth year .....	<input type="checkbox"/>	<input type="checkbox"/>
My fourth year was largely spent in the out-patient clinics .....	<input type="checkbox"/>	<input type="checkbox"/>
The teaching we received in out-patient clinics (third or fourth year) was about as good as the teaching on in-patient services	<input type="checkbox"/>	<input type="checkbox"/>
My responsibilities and activities as a senior (4th year) student were very nearly the same as those I have had as an intern ....	<input type="checkbox"/>	<input type="checkbox"/>
My fourth year challenged my intellectual ability as much, or more than, my third year .....	<input type="checkbox"/>	<input type="checkbox"/>
The best clinical teachers in our school did little teaching in the out-patient clinics .....	<input type="checkbox"/>	<input type="checkbox"/>

(c) Please answer *yes* or *no* for the following questions.

	Yes	No
Did you have an <i>elective period</i> in your fourth year?	<input type="checkbox"/>	<input type="checkbox"/>

*IF YES*, please answer the following:

Do you consider the choice of electives available to you was well planned (as to content, educational value, relationship to your interests, facilities available in each field) .....	<input type="checkbox"/>	<input type="checkbox"/>
Did you find the time spent on your elective to be a valuable experience? .....	<input type="checkbox"/>	<input type="checkbox"/>
Would you have liked the elective time better if a wider range of opportunities had been offered? .....	<input type="checkbox"/>	<input type="checkbox"/>
Would you have preferred not to have an elective period? .....	<input type="checkbox"/>	<input type="checkbox"/>
Would you have preferred a longer period? .....	<input type="checkbox"/>	<input type="checkbox"/>
How long was it? .....	_____ weeks	

(d) To what extent has your internship been a valuable educational experience beyond your clinical clerkships in medical school?

Check one: None ☐  
 Little ☐  
 Some ☐  
 Much ☐

33. Have you definitely decided what *general field* of medicine your career will be?

*IF NO, SKIP TO QUESTION #35*

Yes \_\_\_\_\_  
 No \_\_\_\_\_

## 34. Please check general field you have chosen:

- |                                    |                          |  |                          |
|------------------------------------|--------------------------|--|--------------------------|
| (a) Anesthesiology .....           | <input type="checkbox"/> | Preventive Medicine and Rehabilitation ..... | <input type="checkbox"/> |
| Basic Science .....                | <input type="checkbox"/> | Psychiatry .....                             | <input type="checkbox"/> |
| Dermatology .....                  | <input type="checkbox"/> | Public Health .....                          | <input type="checkbox"/> |
| General Practice .....             | <input type="checkbox"/> | Radiology .....                              | <input type="checkbox"/> |
| Hospital Administration .....      | <input type="checkbox"/> | Surgery, general .....                       | <input type="checkbox"/> |
| Industrial Medicine .....          | <input type="checkbox"/> | Urology .....                                | <input type="checkbox"/> |
| Internal Medicine .....            | <input type="checkbox"/> | Orthopedics .....                            | <input type="checkbox"/> |
| Military Medicine .....            | <input type="checkbox"/> | Neurosurgery .....                           | <input type="checkbox"/> |
| Obstetrics and/or Gynecology ..... | <input type="checkbox"/> | Thoracic .....                               | <input type="checkbox"/> |
| Ophthalmology .....                | <input type="checkbox"/> | Otorhinolaryngology .....                    | <input type="checkbox"/> |
| Pathology .....                    | <input type="checkbox"/> | Plastic surgery .....                        | <input type="checkbox"/> |
| Pediatrics .....                   | <input type="checkbox"/> | Other .....                                  | <input type="checkbox"/> |
| Physical Medicine .....            | <input type="checkbox"/> | Specify .....                                | <input type="checkbox"/> |

## (b) When did you make this choice? Check one of the following:

- Had chosen a field before internship and choice remains the same ..... ☐
- Had chosen a field before internship but changed mind during internship ..... ☐
- Chose a field for the first time during internship ..... ☐

## (c) What was the effect of your internship experience on this choice?

## Check one of the following:

- Choice unaffected by intern experience in this field ..... ☐
- Choice was influenced by favorable intern experience in this field ..... ☐
- Choice was made in spite of unfavorable intern experience in this field ..... ☐
- Choice was made in spite of having no experience in this field as an intern ..... ☐

## 35. Please answer for each of the following:

- |  | Yes                      | No                       |
|--|--------------------------|--------------------------|
| Do you plan to take residency training? .....                          | <input type="checkbox"/> | <input type="checkbox"/> |
| Do you know in what hospital you will have this training? .....        | <input type="checkbox"/> | <input type="checkbox"/> |
| Is it the same hospital in which you have interned? .....              | <input type="checkbox"/> | <input type="checkbox"/> |
| Do you intend to take board examinations in a specialty? .....         | <input type="checkbox"/> | <input type="checkbox"/> |
| Do you expect to serve in the armed forces? .....                      | <input type="checkbox"/> | <input type="checkbox"/> |
| Do you hope to delay this until after completion of a residency? ..... | <input type="checkbox"/> | <input type="checkbox"/> |

## 36. Regardless of the field you checked in question #34, when you finish your formal medical education and training, how do you hope to spend your time?

## CHECK ONE:

- Career of combined teaching and research ..... ☐
- Career of combined teaching and private practice ..... ☐
- Career of combined teaching, research and private practice ..... ☐
- Career of combined research and private practice ..... ☐
- Research only ..... ☐
- Teaching only ..... ☐
- Private practice only (general practice) ..... ☐
- Private practice only (specialty practice) ..... ☐

QUESTIONS #37 AND #38 TO BE ANSWERED BY ALL THOSE PLANNING SOME PRIVATE PRACTICE

## 37. What type of practice do you plan to have when you start out?

## CHECK ONE:

- Solo ..... ☐  
 Partnership with senior physician ..... ☐  
 Partnership with physician of your age ..... ☐  
 Small group practice ..... ☐  
 Large group practice ..... ☐  
 Undecided ..... ☐

## 38. (a) In what community do you plan to practice?

## CHECK ALL THAT APPLY:

- The community of your family or wife's family ..... ☐  
 Where you went to medical school ..... ☐  
 Where you took your internship ..... ☐  
 Where you will take your residency ..... ☐  
 Somewhere other than any of the above ..... ☐  
 Undecided as yet ..... ☐

Yes No

- (b) Do you plan to seek hospital privileges in the community in which you will practice? ..... ☐ ☐

## 39. Finally, some general questions about your internship.

## MARRIED INTERNS:

Yes No

- Does your hospital have apartments for rent in the immediate vicinity of the hospital? ..... ☐ ☐

## IF NO:

- Would your year have been made "significantly better" if it did? .... ☐ ☐

## ALL INTERNS:

Yes No

- In general, were you made to feel welcome as part of the hospital staff? ..... ☐ ☐

- Did the professional staff, collectively or as individuals, arrange any social activities for the interns? (e.g.—entertain you in their homes, staff dinners, dances, picnics, etc.) ..... ☐ ☐

- If yes, did these activities contribute significantly toward making your intern year more pleasant? ..... ☐ ☐

- Were the living quarters provided by the hospital adequate for the number of men using them? (NOTE: Please answer even though you may have stayed in the hospital *only when on call*.) ..... ☐ ☐

- As you see it now, how good do you feel the advice and counsel given you by your medical school faculty (regarding internships) was?

- Check one: Very good ..... ☐  
 Good ..... ☐  
 Fair ..... ☐  
 Poor ..... ☐

- How valuable do you feel your internship has been in terms of your ultimate goal in medicine?

- Check one: Very valuable ..... ☐  
 Moderately valuable ..... ☐  
 Somewhat valuable ..... ☐  
 Of little value ..... ☐  
 Am not sure ..... ☐

## 40. Any additional comments you wish to make.



# The Ninth Annual Report of the National Intern Matching Program

WARD DARLEY, M.D.,\* and ALICE SKARZYNSKI†

The ninth National Intern Matching Program was completed without incident, except that in many instances bad weather delayed the mail delivery of both student and hospital matching notifications.

This report, as shown by Tables 1, 2, 3, 4, and 5, brings most of the usual basic data up to date. Table 1, which depicts the numerical and percentage participation of U.S. and Canadian graduates and approved U.S. hospitals and programs, shows no significant changes between 1960 and the previous 5 years.

Except for the continued increases in the number of intern positions offered and students participating, Table 2 likewise shows no significant change over previous years. However, so as to give clarification to the significance of the group of graduates that go unmatched, two new columns (10 and 11) have been added to this table. The figures in these two columns break the unmatched participants into two groups: those from U.S. and Canadian schools and those from foreign schools. By and large the number of unmatched U.S. and Canadian graduates has steadily declined, whereas, prior to 1959, the number of unmatched foreign graduates had increased.

N.I.M.P. was originally established with the idea that the only graduates eligible for participation would be from schools of the United States and Canada.

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However, certain participating hospitals would not accept applications from foreign graduates except through N.I.M.P., and as a consequence the participation of foreign graduates was permitted. The number participating has never been large. Beginning with the eighth program in 1959, however, participation of foreign graduates in N.I.M.P. was limited to those with E.C.F.M.G. certification. As a consequence, only four foreign graduates participated, all of whom were matched. For the 1960 program the number of participating foreign graduates rose to 82, all but eleven of whom were matched.

The number of Canadian graduates participating in the Matching Program has never been large: 90 in 1955 to a maximum of 154 in 1951; 116 in 1960. Canada conducts its own Matching Program (The Canadian Intern Placement Service), in which U.S. graduates are eligible to participate. Neither U.S. or Canadian graduates can participate in both programs. They must choose one or the other.

Table 3—the percentage of students matched by order of choice—shows that, since 1955, the percentage receiving first choice has been somewhat lower than for previous years. Table 4 reveals a continued slow increase in the average number of applications per student; and Table 5—the hospital's ranking of students with whom they were matched—shows a rather moderate shift from Group I to Groups II, III, and IV. This means that for 1960 more hospitals were



matched with their lower ranked applicants. The findings in Tables 3, 4, and 5 in all probability reflect a growing tendency for students to try for hospitals in which they may feel their chances of acceptance are open to question, but also in which they would like to intern if they possibly can. A student can justify such "tries" because in doing so, he knows he is not hurting his chances for his second, or lower, choice hospital—hospitals which formerly he would have given higher rankings.

Tables depicting the types and numbers of internships offered and filled and also the types and numbers of straight internships offered and filled through N.I.M.P. since 1952 are not repeated in this report. The report for the eighth program revealed that in general there was a growing preference for straight internships and from among these for internships in medicine, surgery, and pathology (1). After more time has elapsed, against which further change can be appreciated, these tables will be repeated.

The program for 1958 is the last time that the N.I.M.P. experience was analyzed for the number and percentage of internships filled according to type of hospital (major and minor teaching affiliated, nonaffiliated, and federal), amount of stipend and size of program (2). In general the 1958 report seemed to indicate an improving situation for the major and minor affiliated teaching hospitals, for federal hospitals, for hospitals that offered monthly stipends of less than \$100, and for hospitals that had programs involving from twenty to 49 interns.

With the present report it was decided to consider a more careful analysis of the type of hospital and amount of stipend as possible factors which influence student choice of internship.

The data regarding type of hospital

TABLE 3  
PERCENTAGE OF STUDENTS MATCHED  
BY ORDER OF CHOICE

Year	Per cent first choice	Per cent second choice	Per cent third choice	Per cent fourth choice or lower
1952	84	10	3	3
1953	85	10	3	2
1954	82	11	4	3
1955	76	14	5	5
1956	74	15	6	5
1957	76	13	6	5
1958	74	14	6	6
1959	77	12	5	6
1960	74	13	6	7

TABLE 4  
APPLICATIONS PER STUDENT

Year	No. students	No. applications	No. applications per student
1952	5,681	21,728	3.8
1953	6,033	19,416	3.2
1954	6,412	21,579	3.4
1955	6,713	25,617	3.8
1956	6,821	29,474	4.3
1957	6,923	30,434	4.4
1958	7,131	32,090	4.5
1959	6,729	29,416	4.4
1960	6,911	32,765	4.7

TABLE 5  
HOSPITALS' RANKING OF STUDENTS WITH  
WHOM THEY WERE MATCHED

Year	Per cent matched from Rank Group I*	Per cent matched from Rank Group II*	Per cent matched from Rank Group III*	Other	Total
1956	61	24	11	4	100
1957	71	19	7	3	100
1958	67	22	8	3	100
1959	69	21	8	2	100
1960	56	24	13	7	100

\* If hospital quota is 10, first ten graduates on list form Rank Group I, numbers 11-20 Rank Group II, etc.

covers the period 1953 or 1954 through 1960. The federal hospitals have been eliminated from the consideration.

The comparison of the major and minor teaching hospitals affiliated with medical schools and of nonaffiliated hospitals in terms of their success in filling their internship positions in 1953, 1958, and 1960 is presented in Chart 1. The

data upon which Chart 1 is based will be found in Tables 6, 7, and 8. The "over-all weighted per cent" noted in the bottom line of each of these tables is derived by multiplying the percentage of the total number of hospitals of a specific type with a specific level of success in filling their internship quota (e.g., major teaching hospitals which fill 50-99 per cent of their quotas) by the "per cent matched" figure listed for this type of hospital in the table. This calculation weights the over-all "per cent matched" figure in such a way that the levels of success having the largest number of hospitals are given the greatest weight. Thus, the 58 major teaching hospitals which in 1953 filled 50-99 per cent of their quotas are given greater weighting than the twelve hospitals in 1953 which did not fill any of their quota.

Chart 1 indicates that the major teaching hospitals with an annual average of 78 per cent of their positions being filled

through N.I.M.P. are the most successful of the three types of hospitals in meeting their requirements for interns. Further, the proportion of filled positions in this type of hospital has tended to increase over the years from 70 per cent in 1953 to 83 per cent in 1960.

The minor teaching hospitals have met with only moderate success in filling their internship positions in that they filled an average of 50 per cent of their positions annually. This type of hospital also showed the greatest variation from year to year in proportion of positions filled, i. e., 38 per cent in 1953, 65 per cent in 1958, and 47 per cent in 1960.

The nonmedical school-affiliated hospital meets with the least success of the three types of hospitals in filling its internship positions. This type of hospital shows an annual average of 26 per cent of positions filled. In contrast to the trend indicated in the major teaching hospital of increasing success over the

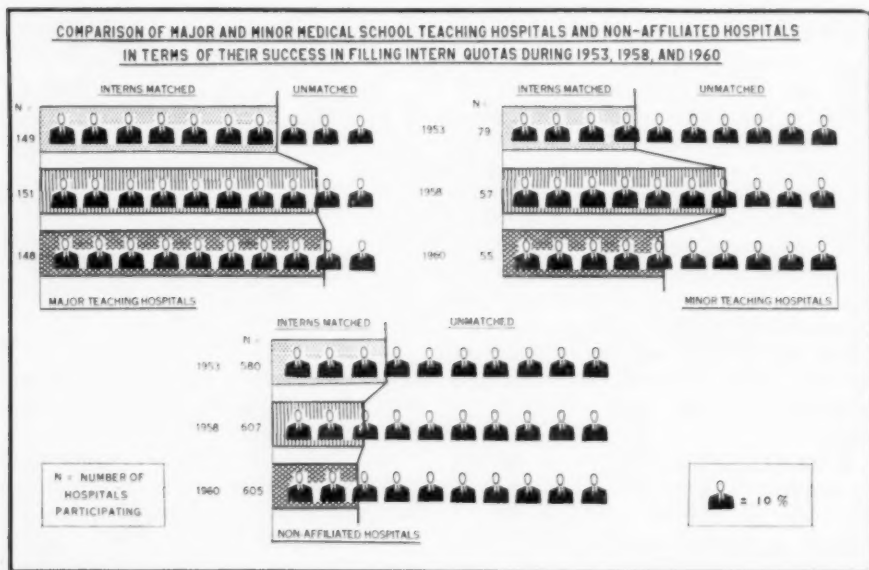


CHART 1

TABLE 6  
MAJOR TEACHING HOSPITALS

RANGE OF SUCCESS IN MATCHING PROGRAM (PER CENT)	1953			1958			1960		
	No. hospitals	Interns Sought	Matched	No. hospitals	Interns Sought	Matched	No. hospitals	Interns Sought	Matched
100	39	897	897	45	1,224	1,224	45	1,313	1,313
99-50	58	1,962	1,457	78	2,528	1,976	70	2,261	1,882
49-01	40	930	289	22	526	182	26	758	283
0	12	87	0	6	47	0	7	49	0
Total:	149	3,876	2,643	151	4,325	3,382	148	4,381	3,478
Over-all weighted per cent:			70.0						80.7

TABLE 7  
MINOR TEACHING HOSPITALS

RANGE OF SUCCESS IN MATCHING PROGRAM (PER CENT)	1953			1958			1960		
	No. hospitals	Interns Sought	Matched	No. hospitals	Interns Sought	Matched	No. hospitals	Interns Sought	Matched
100	11	177	177	11	145	145	6	89	89
99-50	20	271	190	25	364	265	19	275	188
49-01	28	403	106	13	175	38	21	304	93
0	20	205	0	8	62	0	9	86	0
Total:	79	1,056	473	57	746	448	55	753	370
Over-all weighted per cent:			38.3						49.1

TABLE 8  
NONAFFILIATED HOSPITALS

RANGE OF SUCCESS IN MATCHING PROGRAM (PER CENT)	1953			1958			1960		
	No. hospitals	Interns Sought	Matched	No. hospitals	Interns Sought	Matched	No. hospitals	Interns Sought	Matched
100	62	1,120	1,120	65	841	841	70	1,219	1,219
99-50	128	1,475	1,030	127	1,607	1,109	105	1,578	1,151
49-01	178	2,085	478	151	1,797	428	156	1,974	455
0	212	1,359	0	264	2,116	0	274	2,485	0
Total:	580	6,039	2,628	607	6,361	2,378	605	7,256	2,825
Over-all weighted per cent			31.2						23.8

years in filling positions, the nonaffiliated hospital indicates a decline in proportion of positions filled from 31 per cent in 1953 to 22 per cent in 1960.

A second basis for comparison of hospitals as regards their internship programs is the amount of stipend paid to the interns. Comparative data on the success in filling internship positions experienced by hospitals paying various amounts of stipends to interns is presented in Chart 2. The data supporting Chart 2 will be found in Table 9. The years 1954, 1956, 1958, and 1960 are used as reference points. Only those hospitals that maintained constant stipend levels during this period were included.

In analyzing the problem of filling internship positions in hospitals it would

seem reasonable that the higher the stipend the more likelihood of meeting success in filling internship quotas, this particularly when almost all stipends are low. The data in Chart 2 indicate that this is not the case. First, Chart 2 indicates that the hospitals paying the smallest amount of stipend (\$50 per month or less) with an annual average of approximately 80 per cent of positions filled are the most successful of the four groups in filling their internship positions. Moreover, these hospitals show a slight trend toward increasing success over the years from 79 per cent in 1953 to 86 per cent in 1960. Among the hospitals in this group 25 out of 34, or 74 per cent are major teaching hospitals.

Each of the other groups or hospitals (i.e., those paying stipends of \$51-\$100

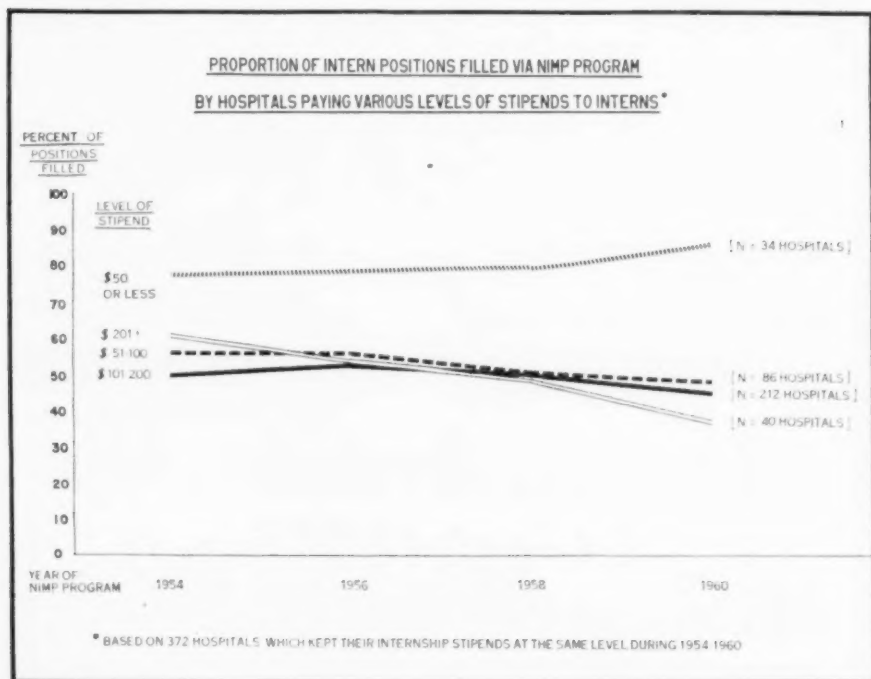


CHART 2



TABLE 9  
NUMBER AND PROPORTION OF INTERN POSITIONS FILLED  
THROUGH N.I.M.P. BY HOSPITALS  
PAYING VARIOUS LEVELS OF STIPEND\*

Year	No. hospitals	Stipend level per month	Total positions offered	No. positions matched	Per cent matched
1954	34	\$50 or less	881	695	79
1956	34	50 or less	961	756	79
1958	34	50 or less	989	786	80
1960	34	50 or less	991	856	86
1954	86	\$51-100	1,327	741	56
1956	86	51-100	1,350	753	56
1958	86	51-100	1,399	713	51
1960	86	51-100	1,482	704	48
1954	212	\$101-200	2,327	1,159	50
1956	212	101-200	2,499	1,316	53
1958	212	101-200	2,656	1,318	50
1960	212	101-200	2,818	1,271	45
1954	40	\$201 or more	430	262	61
1956	40	201 or more	458	249	54
1958	40	201 or more	473	231	49
1960	40	201 or more	460	173	38

\*Based on 372 hospitals which kept their internship stipends at the same level during 1954-1960.

per month, \$101-\$200 per month, or \$201 or more per month) show an average of roughly 50 per cent success in filling internship quotas during the period 1954-1960. The hospitals paying stipends amounting to \$201 or more per month show a general decline in success in filling quotas from an average of 61 per cent of quotas filled in 1954 to 38 per cent of quotas filled in 1960. Among the hospitals in this latter group, 37 out of 40, or 93 per cent, are nonmedical school affiliated hospitals.

A total of 319 hospitals among the 691 hospitals participating in each of the N.I.M.P. programs from 1954 to 1960 changed the amount of stipend paid to interns. Two hundred and ten of these hospitals made one increase in stipend during this 8-year period, thus yielding suitable data for an analysis of the amount of success the hospitals achieved in filling their quotas of interns before and after a stipend increase.

Results of an analysis of net gain or loss in percentage of quota filled are pre-

sented for the 210 hospitals in Table 10. The data are presented in terms of the number of hospitals which showed a net gain, no change, or a loss in proportion of intern quota filled concomitant with a stipend increase. The proportions of the 210 hospitals analyzed which showed a net gain, no change, or a net loss in proportion of intern quota filled is also indicated. Finally, the average dollar value of increase in stipend is shown for each level of gain or loss in quota-filling capability.

About two-fifths of the hospitals showed a gain in intern quota filled concomitant with a stipend increase and about the same number showed a loss of intern quota filled. The remaining one-fifth showed no change whatsoever in their quota-filling capability.

Stating the results of Table 10 somewhat differently, it was found that: (a) about 15 per cent of the 210 hospitals showed a significant gain in intern quota-filling capability, i.e., an increase of more than 25 per cent in proportion of quota

TABLE 10  
THE RELATIONSHIP BETWEEN NET GAIN (OR LOSS) IN CAPABILITY OF  
FILLING INTERNSHIP QUOTA AND AVERAGE AMOUNTS OF STIPEND  
INCREASE AS DEMONSTRATED BY 210 HOSPITALS WHICH MADE  
ONE CHANGE IN THEIR STIPEND WHILE PARTICIPATING  
IN N.I.M.P. DURING 1954-60.

	Amount of gain or loss	No.	Per cent	Av. value of increase of stipend per month
Net Gain	50% or more	7	3	\$79
	25-49%	24	11	76
	1-24	58	28	73
		89	42	
No change	0	39	19	\$70
Net Loss	1%-24%	41	19	\$66
	25-49	31	15	67
	50 or more	10	5	70
		82	39	
Total:		210	100	

TABLE 11  
A COMPARISON OF VARYING LEVELS OF STIPEND INCREASE WITH AVERAGE  
AMOUNT OF CHANGE IN INTERN-QUOTA FILLING CAPABILITY AMONG  
210 HOSPITALS WHICH MADE ONE CHANGE IN THEIR STIPENDS  
WHILE PARTICIPATING IN N.I.M.P. DURING 1954-60.

Amount of stipend increase	No.	Per cent of total	Av. amount of change in quota- filling capability (per cent)
\$ 1- 49	64	30	-7
50- 99	96	46	-1
100-149	40	19	+4
150 or more	10	5	+3
Total:	210	100	

filled, (b) 20 per cent of the 210 hospitals showed a definite loss (a decrease of more than 25 per cent) in intern quota filled despite an increase in stipend and (c) two-thirds of the hospitals showed little or no change in amount of quota filled concomitant with an increase in stipend.

It will be noted that the average amount of increase in stipend paid per month shows very little variation between those hospitals which showed a gain in quota-filling capability and those that showed a loss in this capability.

Table 11 indicates: (a) the number of hospitals increasing their intern stipends

by varying amounts, (b) the proportions of all 210 hospitals which increased their stipends by a given amount, and (c) the average amount of change in quota-filling capability that was concomitant to a given level of stipend change.

The great majority (76 per cent) of all hospitals which increased their stipends made an increase of less than \$100 per month. The average dollar amount of increase of stipend for all 210 hospitals in the sample was approximately \$75. Further, there is very little change, on the average, in quota-filling capability irrespective of the amount of increase in stipend.

This report reveals essentially three conclusions:

1. There is a growing tendency on the part of U.S. and Canadian students to add, as first choice, hospitals in which they feel their chances for acceptance are open to question, but also in which they would like to intern if they possibly can.

2. Hospitals with major medical school affiliation and to a lesser extent those with minor affiliations are showing an increasing tendency toward filling their internship quotas.

3. Large or increasing monthly sti-

pends do not appear to be a factor in filling intern quotas.

#### REFERENCES

1. DARLEY, W., MEIER, F., AND SKARZYNSKI, A. The Eighth National Intern Matching Program. *J. M. Educ.*, 35: 238-43, 1960. (*J.A.M.A.*, 172: 648-51, 1960; *The New Physician*, 9: 30-34, 1960; *Hospitals*, 34: 52-63, 1960.)
2. DARLEY, W. The Seventh National Intern Matching Program. *J. M. Educ.*, 34: 38-46, 1959. (*J.A.M.A.*, 169: 148-54, 1959; *The New Physician*, 8: 35-101, 1959; *Hospitals*, 33: 50-61, 1959.)

# The Basic Medical Sciences in the Stanford Plan

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## INTRODUCTION

The general features of the Stanford Plan of Medical Education have been described by Stowe (6). The purpose of this article is to discuss in greater detail how we teach the basic medical sciences during the first 3 years of the 5-year curriculum. Most of the material will be factual, but where expressions of opinion intrude they represent my own point of view and not necessarily that of my colleagues.

## SALIENT FEATURES OF THE NEW CURRICULUM

For the medical student entering Year I the first striking difference from the traditional curriculum is his immediate exposure to an experimental laboratory course, "Cell Structure and Function," taught by a staff drawn from several disciplines (this year physiology, pharmacology, anatomy, genetics, microbiology, biophysics). Through lectures and conferences the student learns basic concepts of cell physiology, especially the interrelationships between structure, ultrastructure, and function. In the laboratory, mammalian cells grown *in vitro* provide material for experiments on growth, nutrition, metabolism, and morphology. The course serves to familiarize students with laboratory equipment and procedures and to inculcate sound methods of experimental design, data collection, and interpretation. Independent projects are undertaken by groups of students under close supervision, and

selected ones report to the entire class at a symposium which closes the work of Quarter 1.<sup>1</sup> Also during the first quarter the student begins a lecture course in general biochemistry, a lecture-and-laboratory course in general microbiology, and a course in biostatistics. Except for the study of cell structure and ultrastructure the teaching of anatomy is conspicuously absent from the first part of the curriculum; we seek to provide an experimental rather than a descriptive introduction to the study of medicine.

Quarter 2 is largely devoted to further lectures in biochemistry and to very intensive laboratory work in this subject. The laboratory course is unusual, embodying our philosophy that "cookbookery" in the laboratory is pedagogically sterile and that complete "coverage" of material is unnecessary (1). Twenty 5-hour sessions of laboratory work are devoted to only two problems—the isolation and characterization of a single enzyme (hexokinase) and of DNA. During this quarter bioelectricity, nerve conduction, muscle function, and neuromuscular transmission are subjects of lectures by physiologists and pharmacologists. Cadaver dissection occupies two afternoons weekly, while microscopic anatomy is taught on a single afternoon; in both courses special stress is laid upon the extremities and peripheral structures, including nerves and muscles.

<sup>1</sup> Stanford uses the quarter rather than semester. The regular academic year consists of three quarters about 11 weeks long, the final week of each quarter serving as an examination period.

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With a sound foundation laid in biochemistry and cell physiology the work of the third and subsequent quarters becomes largely system-oriented, but Quarter 3 includes a 10-hour course in basic genetics and the final portion of the 30-hour biostatistics course that extends throughout the first year. Quarter 3 concentrates on the peripheral autonomic nervous system, with the Departments of Physiology, Pharmacology, and Anatomy carrying major teaching responsibility. Other organ systems (cardiovascular, respiratory, renal, gastrointestinal, endocrine, reproductive) are taken up in sequence by the same departments during Year II (Quarters 4-5). We try to achieve a temporal coordination of all the lectures, conferences, and laboratory exercises dealing with a given system. The last part of Year II (Quarter 6) is devoted entirely to the subject of infection, with simultaneous teaching of specific vectors of infectious disease (Microbiology), tissue responses to infection (Pathology), medical parasitology (Preventive Medicine), chemotherapy (Pharmacology). This block of time is preceded by an introductory course in general pathology for 2 hours each week throughout Year II.

Year III is largely devoted to the central nervous system. Anatomy of the head and neck, neuroanatomy, neurophysiology, neuro- and psychopharmacology, and neuropathology occupy Quarters 7 and 8. Although we have no experience yet with this phase of the new curriculum we hope that the knowledge and sophistication gained in the 2 previous years will prepare the student well for this most complex area of study. Finally, in Quarter 9 there is intensive instruction in special pathology and in those integrative and therapeutic aspects of pharmacology not considered earlier. A second 10-hour lecture course in genetics (largely human) is presented. During

this year the Department of Preventive Medicine is responsible for 30 lecture hours on environmental hygiene, community health organization, and epidemiology.

Throughout the 3-year span of basic medical science teaching about  $\frac{1}{2}$ -day weekly is devoted to a course entitled "Introduction to Clinical Medicine," which is described in Stowe's (6) article. Also provided are substantial amounts of elective time within the medical curriculum (in addition to other free time discussed below), in which all departments, clinical as well as preclinical, offer a variety of optional courses dealing with specific topics in a more thorough way than the "core" curriculum permits.

Difficult to describe in words is a certain atmosphere that pervades our teaching in the new curriculum, an outward expression of the faculty's resolve to treat our medical students as the mature graduate students they are. That such a policy would evoke appropriate student attitudes in response was obvious to all but the most cynical among us. I have found it both satisfying and stimulating to teach in this unusual academic environment.

In some measure the more favorable student attitudes may be attributed to our abolishing the most pernicious aspects of rank grading (2), and substituting a simple A, +, E system. "Grade-point averages" and rank standings are not computed, for we reject the meaningless arithmetic that makes A in one course plus D in another equal to C+ (in what?). On the other hand, a student's several instructors are expected to submit thoughtful descriptive evaluations of his year's work, so that his manifold capabilities and weaknesses in every segment of the medical course can be assessed qualitatively.

A large part of the improved student morale must be attributed to the slower

(and steadier) pace permitted by a stretched-out basic medical sciences curriculum. There is simply more time for reflection, for unhurried contemplative reading, for assimilating the best of the original literature in each field. Most welcome of all, our students seem to be learning early that real study is more rewarding than "cramming"; that, since textbooks oversimplify, accessory sources must be consulted; that the controversies are usually more interesting than the "facts"; and that all our present knowledge serves mainly as a springboard into the fascinating unknown.

#### THE TEACHING LABORATORIES

All laboratory teaching in the basic medical sciences (except for gross anatomy) is conducted in multidiscipline laboratories. The essential feature of the

teaching laboratory is that it belongs wholly to the sixteen students assigned to it. They have access to it 24 hours a day, and no other students ever work in it. The 22 × 36-ft. laboratory (Chart 1) contains a long central table with desk space for eight students on each side, with drawers, microscope cabinets, book rack, gas, and electric outlets.<sup>2</sup> When the students are sitting at their own places, an instructor has only to stand at the blackboard or projection screen, and a conference group is in session. Behind the students, along both walls of the room, are "stand-up" workbenches,

<sup>2</sup>The original plan was based on a 24-ft. width. The need for economy forced a general reduction of the bay size to 22 ft., and this has proved to be just barely adequate. However, we strongly prefer the original 24 × 36-ft. design.

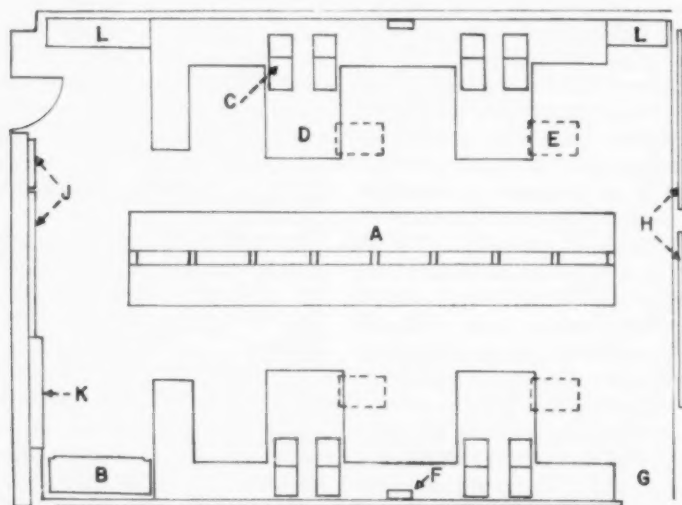


CHART 1.—Basic medical sciences teaching laboratory.

Scale diagram of the 16-man unit laboratory, 22 × 36 ft. A central desk for sixteen students with central book trough and gas and electric outlets. B—hood with all utilities. C—sink and drainboard serving two students. D—37-inch high bench serving four students and extending also along wall. E—detachable animal board. F—cup sink. G—passage to "interlab" serving 2-unit laboratories. H—windows with blackout shades. J—chalkboard, tackboard, and intercom unit. K—bookshelves. L—cabinets for general storage; all high benches contain standard drawer-and-cabinet storage space.



animal boards, sinks, reagent shelves, cabinets, and alcoves for polygraphs and other specialized equipment. It is easy to move from experimental procedures to conference discussions and back again, as circumstances dictate. We have been pleased with the way students have made the laboratory their "home"; late evening or weekend visits never fail to discover groups of students studying, arguing, drinking coffee, and even exercising their traditional right to complain about the curriculum.

There are twelve laboratory units, as described above, enough to accommodate three whole classes of 64. Between each pair of sixteen-man laboratories is a 13 × 36-ft. "interlab" containing equipment such as refrigerators, refrigerated centrifuges, and incubators, too large to fit into the regular laboratories. The "interlabs" also provide unassigned space for students carrying out special experiments, and for demonstration material. Numerous additional rooms are available for special purposes—for example, a human experiment laboratory, a calculating and drafting room, balance rooms, regulated-temperature rooms, readily accessible animal quarters, a large stockroom, glass-washing and medium-preparation areas, repair shops, and secretarial and administrative offices.

All equipment is up-to-date and of research caliber. Our philosophy has differed sharply with the view that students should learn to work with the simple tools of yesteryear. We believe medical students are quite capable of using modern research instruments to good effect, and we are impressed by the way these young people, who have grown up in a mechanized, automated, electronic civilization accept as commonplace the complex armamentarium of modern medical science. A complete equipment list would not be appropriate here, but a few examples are in order. For biochemical

experiments there is in each laboratory a refrigerated centrifuge, spectrophotometers (visible-range), ultraviolet spectrophotometer, torsion balance, water baths, fraction collector, refrigerator, freezer, radio-isotope detectors, and scalars. Centrally located are a few high-sensitivity automatic balances, a preparative ultracentrifuge, a scintillation detector for gamma counting. For physiological experiments each group of four students has a four-channel polygraph with a variety of transducers and other in-put devices, a research-type stimulator, an oscilloscope, an electric kymograph. Again the class as a whole shares a smaller number of specialized items such as treadmills, instruments for gas analysis, stereotaxic apparatus, automatic calculators. All the equipment belongs to the teaching laboratories, for the exclusive use of medical students. The cost of equipping these laboratories partially to date has been close to \$300,000; we estimate a total expenditure of a half million dollars before the job is completed. This may seem a shocking sum by the old standards, but we believe any appraisal of the cost of a first-rate medical education today must take account of such equipment needs in a realistic way.

The teaching laboratories operate as an autonomous administrative unit under a Director (Dr. Frederick A. Fuhrman, Professor of Physiology), who also acts as coordinator of the entire basic medical sciences curriculum. An independent budget covers the total cost of operation, including personnel, equipment, supplies, and animals, for the teaching needs of all the preclinical departments. The staff includes an assistant director (post-doctoral), four technicians, secretary, stockroom supervisor, and equipment maintenance personnel. The Director's research space is provided in a contiguous area rather than in any department of the medical school.

A major advantage to the departments is that most of the preparation for laboratory teaching exercises is undertaken by the staff of the teaching laboratories. The usual procedure is for department faculty members to try out the laboratory experiments and furnish lists of supplies, equipment, solutions, and animals. A prototype set-up is assembled, which the teaching laboratory staff can then reproduce for each group of students. Thus, although teaching functions are physically removed from departmental areas, any inconvenience is offset by the lesser burden of preparation upon the department faculty and by the greater efficiency of a full-time staff trained for this type of work.

Since space in the teaching laboratories is fully occupied throughout the academic year, the initial construction is obviously more economical than if each department were provided with its own teaching area, which would then lie idle for much of the time. On the other hand, the yearly expense of laboratory teaching is greater than it would be under departmental auspices, although it is difficult to calculate precisely how much greater. We believe that the benefits justify considerable additional cost, especially when measured in terms of greater teaching effectiveness and better utilization of faculty time.

#### FREE TIME IN THE FIVE-YEAR CURRICULUM

Of particular significance for the basic medical science departments is the fact that the customary 2-year span of pre-clinical teaching is extended over 3 full academic years. If the number of hours of required course work remained unchanged, this extension would leave about one-third of the total time unscheduled. However, we have reduced the hours devoted to required course work in the preclinical curriculum by about 15 per cent, to create even more unscheduled

time. The free hours are quite evenly distributed over the 3 years, so that nearly half of every day is free, mornings in Years I and III, afternoons in Year II. How may this large amount of free time be used? If the student has yet to earn his baccalaureate degree, that obligation takes priority. However, the majority of our students have completed a college course, so that they are at liberty to use the free time however they wish. Opportunities for graduate study in nonmedical fields have been mentioned by Stowe (6). I wish to point out here the remarkable opportunity for our medical students to undertake a research program in one of the departments. A student may work in the laboratory half of every day during the academic year, for 3 years, and full-time for two or three summers. This is no mere dabbling in research, but a chance to participate fully in department activities and to receive continuous research training on a long-term basis. After 3 years the student may decide to concentrate upon clinical studies exclusively. Alternatively, he may, while going on with his clinical courses, return to the laboratory during blocks of 6 weeks and 12 weeks free time in Years IV and V, respectively, and full-time in the summers. On the other hand, if he decides, after so thorough a taste of basic research, that his career lies in that direction, he may change to a Ph.D. program and earn his degree at about the same time his classmates receive their M.D. degrees. Yet another choice would be to spend an additional year or more beyond the 5-year curriculum and earn both M.D. and Ph.D. degrees.

Because this program offers substantial research training to medical students and promises to recruit some very able people into careers in the basic medical sciences, it can be supported to a significant extent by training grants. If a student spends all his free time during the aca-

demical year in a research program, and works in the laboratory all summer, he may receive more than \$2,000 in trainee stipends. We hope that by thus easing the financial burden of the extra medical school year, we may further succeed in attracting promising students into medical research careers. We aim frankly at producing more graduates who are competent investigators and will bring their research training and outlook to bear upon whatever field of medicine they enter.

#### THE ROLE OF DEPARTMENTS

Teaching of the basic medical sciences, as described above, is programmed as a planned sequence of subjects extending over 3 years, rather than as a series of time-blocks assigned to departments for intensive exposition of their own disciplines. What are the effects upon the teaching role and autonomy of the departments?

One problem arises from the much longer total span over which most departments must spread their teaching. The Department of Pharmacology, for example, teaches in every quarter except the 7th, so that three classes are simultaneously receiving instruction in our subject. Our total teaching time varies from 1 to 9 hours weekly. Under the traditional block-teaching pattern, the year is generally divided into teaching and nonteaching segments; the former is discounted by the department faculty as all but useless for research, which is then expected to flourish without distraction during the latter period. We have obviously sacrificed whatever advantages may inhere in this dichotomy. However, I believe (but it is still too early to verify this) that the spread-out teaching responsibility, coupled with the relief from set-up chores in the teaching laboratory will actually increase the fraction of the year which is effectively avail-

able for research, since even the heaviest teaching schedule preempts but a small part of each week. Moreover, as in any curriculum, increased staffing can free faculty members in rotation for periods free of all teaching obligations.

A legitimate concern is whether dilution of a department's teaching effort may weaken its pedagogic impact and make it difficult to communicate the "feel" of the discipline to the students. Our limited experience so far makes us believe that just the opposite is true. First of all, the simultaneous teaching by appropriate departments at each stage of the subject sequence produces an interplay of the various disciplines which appears to stimulate broader student thinking about the topics under study. Secondly, we feel that the influence of a particular discipline upon a student's education is determined by a variety of factors, including not only the number of teaching hours, but also the total duration of exposure. We suspect that our 154 hours of pharmacology instruction will have far greater effect over a 3-year period than would the same number of hours condensed into a few months. The minimum benefit of which we are certainly assured is that the student will no longer be able to put a whole discipline behind him after a single intensive period of study. And each successive topic in the subject sequence builds so systematically upon earlier ones that the operation of such a learning-forgetting cycle becomes much less probable.

Another question concerns the degree to which teaching is "integrated" in our program. Our approach is based primarily upon temporally coordinating the teaching contributions of several departments. We have sought to create favorable conditions for departments to reinforce each other's efforts, to collaborate to the extent they wish, and actually to merge their teaching efforts only if the

mutual desire and good will are present. In the basic medical sciences we have not vested direct teaching responsibilities in "subject committees" but have left these in the hands of autonomous departments. We believe that excellent teaching is a product of inspired and dedicated individuals, competent in their fields and free to exercise their individuality as they choose. The departmental structure already provides a conclave of colleagues who, in an atmosphere of mutual respect, can work constructively to improve their own teaching. The pride a department feels in being known for excellent teaching as well as for excellent research acts as a further beneficial stimulus.

To what extent, then, has departmental freedom of action been curtailed? There is a single committee, comprising a representative of each preclinical department, under the chairmanship of the director of the teaching laboratories, which oversees the basic medical sciences curriculum as a whole and makes such changes as seem desirable. Departments are bound by the decisions of this committee with respect to the subject sequence and the detailed teaching schedule. During the weeks when the kidney is under discussion, for example, the Department of Pharmacology is quite naturally expected to deal with pertinent topics, such as the diuretic agents. However, within the framework of the subject sequence the actual content of lectures and laboratory exercises and the manner of presentation (although they may be subjected to critical discussion in the committee) remain matters for decision by the department. Each department's teaching time is so designated in the schedules distributed to the students, and (thus far at least) we have devised our own departmental examinations and submitted our own evaluations of student achievement. There have been pro-

posals for expanding the scope of conjoint, nondepartmental teaching, and for adopting integrated examination and grading procedures, but these seem unlikely to be acted upon in the near future.

#### CONCLUSION

Anyone who has followed the history of medical school curriculum revision during the past decade cannot be unaware of the major contribution made by the faculty at Western Reserve in breaking radically with the past and thereby forcing us all to think more flexibly about curriculum patterns (5). We owe a debt of gratitude to these pioneers, for even though we have followed a different path and even vigorously reject some of their principles, the Stanford Plan nevertheless shows more than a few traces of the Western Reserve influence. It is also proper to acknowledge the contribution of the Harvard Medical Sciences Program (4) to our thinking, and of the Baylor physiology program (3) to the design and equipment of our teaching laboratories.

As Stowe (6) has pointed out, our approach is (and will continue to be) subject to revision. I do not like to call it experimental, because, in the scientific sense, where proper controls are impossible there can be no true experiment. Already the nature of our program has caused obvious changes in the caliber of our applicants. I think we should keep a sense of balance about what can and cannot be accomplished through "objective" assessments of a new curriculum's achievements. Certainly we should learn what we can about testing and other evaluative procedures that may be useful in measuring what our students gain from the new curriculum. In addition to such evidence, I would depend quite heavily upon the consensus of the faculty after a trial period of 5 or 10 years. The program might be considered successful

if at that time our students have performed well academically<sup>3</sup> and in clinical or other postgraduate training, if an increasing number are entering careers in research or at least maintaining close ties with academic medicine, and if the faculty still feels that the curriculum favors effective teaching. Meanwhile, the very existence of a new curriculum, by compelling all of us to examine the impact of our separate efforts upon the medical student's total educational experience, generates enthusiasms and controversies that enliven the whole academic environment. We do not necessarily urge the wider adoption of our curriculum, and it may even be quite unsuited to the aims of other medical schools. In this period of curriculum reexamination, variety rather than uniformity will probably add the most strength in the long run to medical education everywhere. However, each unique program deserves to be understood thoroughly if we are to benefit by one another's experiences, and it is to promote such understanding that this account has been presented.

<sup>3</sup> National Board examinations are now mandatory.

In conclusion, I should like to point out that a new curriculum is necessarily the product of many minds and enthusiasms, and to acknowledge with gratitude the devoted and effective efforts of my colleagues on the Planning Committee for the Basic Medical Sciences during the years of my chairmanship.

#### REFERENCES

1. GOLDSTEIN, A. A Controlled Comparison of the Project Method with Standard Laboratory Teaching in Pharmacology. *J. M. Educ.*, 31:365, 1956.
2. ———. An Inquiry into the Value of Rank Grades in the Medical Course. *Ibid.*, 33:193, 1958.
3. HOFF, H. E., GEDDES, L. A., and SPENCER, W. A. The Physiograph—An Instrument in Teaching Physiology. *J. M. Educ.*, 32:181, 1957.
4. KARNOVSKY, M. L. A Unified Approach to the Basic Medical Sciences at Harvard. *J. M. Educ.*, 30:15, 1955.
5. PATTERSON, J. W. Interdepartmental and Departmental Teaching of Medicine and Biological Science in Four Years. *J. M. Educ.*, 31:521, 1956.
6. STOWE, L. M. The Stanford Plan: An Educational Continuum for Medicine. *J. M. Educ.*, 34:1059, 1959.

# Medical Impressions of Ghana, West Africa\*

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## INTRODUCTION

While preparing for the trip to Ghana, it became apparent that little information was available on the medical situation in that country. During our search the facilities were exhausted at the National Library of Medicine, the National Institutes of Health, the Armed Forces Institute of Pathology, the Ghana Embassy, the Department of State, and the Division of International Health at Health, Education and Welfare. Accordingly, it was planned to share all information with them, among other interested groups.

Upon arriving in Ghana, Dr. D. W. Harrison, the sponsor and a graduate of the College of Medical Evangelists, expressed great satisfaction with the aims of the fellowship program, and was hopeful that it would be continued indefinitely. In addition to the excellent opportunity afforded medical students, he thinks it important in helping to correct misconceptions about life in America. Although many of the top governmental leaders have toured and/or studied in the United States, a far greater number of people has no idea about American life. In part, this explains the eagerness for conversation shown by those whom we met.

From the outset we would like to pay high tribute to the excellent reception

given by the Ghanaian people. The hospitality exhibited was exemplary from the moment of arrival to the hour of departure. Frankly, it was rather a surprise to be accepted so readily and so completely. Yet it was precisely this acceptance which enabled us to establish many very warm and friendly relationships throughout the social structure. Thus, our mobility in Ghana professionally and socially, was unfettered.

## GENERAL CHARACTERISTICS

Ghana is situated on the Gulf of Guinea just a few degrees north of the Equator and from 2° East Longitude to about 5° West Longitude. It is bounded on the north by Upper Volta, on the west by the Ivory Coast, and on the east by Togo. Half of the country is less than 500 feet above sea level, the highest portion being 2,900 feet along the eastern boundary. The 335-mile-long coastline is mostly low sandy shore, backed by plains and scrub, and intersected by several rivers and streams, most of which are navigable only by canoe. A belt of tropical rain forest extends northward from the coast on the western frontier for 175 miles, broken by heavily forested hills and many streams and rivers. This area, the Ashanti, produces most of the cocoa, minerals, and timber. North of the belt the country undulates from 300 to 1,300 feet and is covered by low bush, parkland savannas, and grassland plains. The country is about the size of Illinois and Indiana combined and consists of 91,843 square miles.

The climate resembles that of any equatorial country. The eastern belt is warm and comparatively dry; the southwest corner is hot and humid; the forest

\* Based on experiences of Andrew L. Thomas and Iris D. Thomas under a Smith, Kline & French Foreign Fellowship, administered by The Association of American Medical Colleges, during the period June 17 to September 15, 1960.

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belt warm and humid; and the north hot and dry. Except in the north there are two rainy seasons, separated by a short and fairly dry period in July and August, with a longer dry season between December and February. In the north the rainy seasons tend to merge. The Harmattan (the dry northeasterly winds) blow in January and February. The average annual rainfall in the coastal zone is 33 inches.

The population is approximately 5½ million persons. The non-African population is less than 15,000, only about 300 of whom are Americans, and most of these are missionaries scattered among the tribal groups. There are many small tribal divisions in the country, and over 50 different dialects are spoken. Among the more important linguistic groups are the Akans, including the Fanti, who live principally on the coast, and the Ashanti in the forest area immediately to the north; the Guans living on the plains of the Volta; the Ga and Ewe of the south and southeast; and the Moshi-Dagomba of the northern territories. Although many of the rural tribal peoples retain their ancient traditional religions, the majority of the educated urban population has embraced the Christian or Islamic faith.

The government is a ministerial form with a unicameral legislature similar to that of Great Britain. During our first 2 weeks in Ghana the country became a republic. They then adopted the concept of the American presidency and abandoned the post of prime minister. The stated aim of the government is to "transform Ghana into a modern unitary state." In the process the government seeks to develop and diversify the country's economy, and expand its education, health, and other services. Although rapid progress is being made in the field of medical care it remains woefully inadequate.

#### THE MEDICAL ESTABLISHMENT

In general, the Ministry of Health is organized along lines similar to that of England. The Honorable L. R. Abavana is the Minister and appears to have a good grasp of the health problems facing the country. The Chief Medical Officer, Dr. E. W. Q. Bannerman, holds a position similar to that of the Surgeon General in the United States.

From all indications the philosophy of medical services approximates that of the National Health Service of Britain. Whether there will be complete state medicine is nebulous at this time. However, many physicians have established private hospitals as if the future is secure; and the government is aware that private services, at present, form a vital part of the medical establishment.

General hospital facilities are available at about 50 hospitals operated by the government, mining authorities, and church missions, and at about twenty private hospitals. However, there is at present only one hospital bed for every 1,750 persons. To alleviate this problem the government plans to provide 1,000 additional beds during the 1960-1961 fiscal year. Health centers will be increased from 21 to 39 during the same period.

At present Ghana has about 320 physicians. However, 400 medical students are abroad studying under government sponsorship, and many will be available for duty in the near future. Even so, the population continues to increase rapidly, and industrialization is progressing just as swiftly. Thus, greater demands are being made on health facilities and personnel, and the pace of development in these areas must quicken correspondingly. In the words of Mr. Appiah, member of Parliament, there must be "acceleration of the establishment of a medical school. . . ." Efforts are being made in that direction.

On July 1, 1960, a technical advisory

mission from the United States studied the problems involved in establishing a medical school. The team was composed of Drs. P. Cornely and W. Sodeman, and Mr. King, an architect. They are preparing a lengthy report through the International Cooperation Administration, and the material should be available in early fall, 1960. The team, as do I, believes Ghana's most urgent need to be a medical school to turn out general practitioners. However, substitute measures are necessary during the interval.

Health education is one of the more effective measures being used to aid the health program. Antimalarial campaign, hygiene lectures, first-aid instruction, and dietary planning discussions are being organized on a mass scale. Results are slowly being realized, but ignorance and superstition continue to account for needless suffering. Again, Mr. Appiah, member of Parliament says, "The Ministry of Health must make a policy statement on herbalists, witch doctors and jujumen who parade most of the country. We must not permit science and superstition to go together." (See later discussion on this problem.)

Health education officers conduct their programs at village health stations. These officers are not physicians but are trained in public health. Each district (county) has such an officer and many subordinate workers. On the other hand, the government sanctions such programs at churches and in other community organizations. Medical officers are permitted to participate, and some private physicians volunteer their services.

#### THE PHYSICIAN

There are approximately 320 physicians in Ghana, giving a ratio of approximately one physician per 17,000 persons. In general, the doctors are well trained, most having been trained in the United Kingdom. Except for Dr. Harrison and

a few American missionaries, Dr. John Bilson, a Ghanaian and Howard University alumnus (1959), is the only American-trained physician in the country.

Obviously, the severe shortage of physicians means every physician is quite busy; yet there are other factors which frustrate the lives of these dedicated men. One of the main such factors is the influence of tribalism and the associated witchcraft.

The "witch doctor"<sup>1</sup> is disappearing in Ghana but still constitutes a grave threat to public health. Some patients with severe illnesses come to the hospital with multiple small lacerations ("medicine marks") that were incised by the "medicine man" as treatment. These wounds are frequently infected, and the patient has the attendant complications of fulminating infections. Except for the circumstances that lead to infections, the main problem is the delay in receiving adequate medical care occasioned by going to the "witch doctor."

Modern medicine is also accepted by those who have been influenced heavily by western society. According to some estimates this group constitutes about one-fourth the population. However, the facts that contagious diseases are prevalent and that a much larger percentage either fails to accept or accepts modern medicine only to a small degree indicate that great progress must be made in educating the populace to accept scientific medicine. Most of the physicians are directing individual efforts toward solving the problem. They feel that some success is being obtained.

Another source of frustration to the Ghanaian physician is the matter of compensation. The overwhelming majority are sent abroad to study at government expense. The length of "service obligation" to the state is a function of the

<sup>1</sup> "Medicine man" and "native doctor" are synonymous terms.

amount paid for an individual's training. Thus, the more expensive the education, the longer the service obligation. In part, this explains why most students seek training in countries other than America.

During his "service obligation" the physician's salary is about \$200 per month. Whereas this is perfectly adequate for the average native, to the physician, affected by the materialistic ideas of industrial societies, the amount is quite inadequate. The situation improves after the 3- to 5-year "service obligation" is over, since most of the physicians either go into private practice (very lucrative) or pursue postgraduate training abroad. As a specialist one receives a higher base pay and has the privilege of charging those patients who can afford some contribution for medical care.

The expatriate physician in the employ of the Ghana government receives about \$550 per month and, if a specialist, receives from \$100 to \$200 more per month. It should be noted that the government pay scale is higher than that of the missions.

Private medical care is available only on a small scale. Most of the private Ghanaian physicians are located in Accra, Kumasi, Cape Coast, and Sekondi-Takoradi. A few European physicians maintain private clinics in the aforementioned areas, but most are in missionary work. A few others operate Ridge Hospital, Accra, which is a small hospital used by foreigners and senior government officials.

Although there is a medical society in Ghana, the physicians have little time for meetings. However, efforts are made to stimulate growth through medical programs such as an occasional lecture, but attendance is necessarily poor. There is little professional contact between the private, missionary, and governmental physicians. Most of the doctors subscribe the major American and British medical

journals and, in this way, maintain some contact with the world of medicine.

The nature of medical problems in Ghana is essentially that of any tropical or subtropical zone, and because of this the battle of medicine is in the practical field. Most of the physicians seem quite adept in their approach, reflecting good training. They appear to be dedicated men and work against tremendous odds, some of which have been mentioned. However, lack of an adequate number of paramedical personnel is a further handicap. The nursing situation is an example.

#### THE NURSE

Fortunately, Ghana trains many of its own nurses. In general, the senior clinical and teaching positions are held by British or United Kingdom-trained Ghanaians. The teaching methods and curricula are similar to those in this country. Facilities are good in most aspects.

Basically, there are two types of nurses in Ghana. These are the State Registered Nurse (SRN) and the Qualified Registered Nurse (QRN). The QRN is the approximate equivalent of an American Practical Nurse, while the SRN is the equivalent of the American Registered Nurse.

Two schools are available to train State Registered Nurses, one at Kumasi Central Hospital, Kumasi, and the other at Korle Bu Hospital in Accra. High school education is a prerequisite for acceptance in the program. Essentially, the program is British in format, and the period of training is 4 years. Some of the graduates are sent abroad, usually to the United Kingdom, for postgraduate training, and the average course is of 18 months' duration.

The Qualified Registered Nurse undergoes a training program based on the apprenticeships system. Graduation from high school is not required. The period of training is 4-5 years. Prospective

students may undertake training at Korle Bu, Kumasi, Sekondi, Cape Coast, Tamale, and Bolgatanga government hospitals. In addition, several private hospitals run by missions and large commercial concerns also train some nurses.

Except for Mental (Psychiatric) Nurses who are trained at the Mental Hospital, Accra, most of the specialized training is taken on an apprenticeship basis; but a few study abroad.

Surprisingly, a large number of males undergo nurses' training. At Korle Bu, for example, approximately 40 per cent of the nursing staff is composed of male nurses. A similar situation prevails in other hospitals.

Needless to say, there is a shortage of trained nurses in Ghana. The supply scarcely equals the losses due to pregnancy and resignations, compounded by the difficulty experienced in recruiting suitable candidates. The problem is alleviated somewhat because relatives are allowed to feed and bathe the patients, thereby freeing the nurse for more pressing or technical duties.

On the whole, we found general staff nursing comparable to that found in the larger county-type hospitals in the United States. The nurses are very conscientious, dedicated, sympathetic, and show keen interest in their patients. They seem aware that the patient is a human being, and all efforts are made to make his hospital stay a pleasant one. The nurses demonstrate great familiarity with a patient's clinical course and treatment and cooperate fully with the physician in helping to restore the individual to a productive life.

Doctor-nurse relationships are exemplary. The physicians are very appreciative, and this rapport helps to simplify the overwhelming problems experienced in returning the patient to his home environment. Frequently, the nurse, being more up to date on a patient's course, is

able to provide extremely valuable information to the overworked physician.

Interpersonal relationships between the nurses are good. They seem cooperative with one another, work well together, and pay high respect to those in supervisory capacities.

As alluded to above, relatives are essentially "auxiliary nurses," and this is of great benefit to the staff. The relatives respect the authority of nurses, and this enables the program to be beneficial to all concerned. For example, mothers are allowed to breast-feed the newborns four times daily. It does not matter whether the mother and/or the baby is hospitalized. In addition, breast milk is stored for the night feeding of the infant.

In contrast to general nursing, specialized nursing was found wanting. Surgical nursing is the area most affected, whereas obstetrical-gynecological nursing is the area least affected owing to the extensive use of midwives.

Midwifery training is easily available, and the trained midwife plays a very important role in the health organization of the country. For example, Korle Bu has a staff of six senior midwives, ten staff midwives, and 99 student midwives. There are approximately 3,500 normal deliveries per year, all of which are made by midwives. In addition, breech deliveries and episiotomies are done by midwives, although suturing must be done by a physician. This arrangement frees the doctor for the many other obstetrical-gynecological problems such as the 50 cesarean sections per annum. Midwives care for a large percentage of the obstetrical patients, but otherwise the nursing situation in this area is similar to that described above.

Surgical nursing is poor for a variety of reasons. First, there are many serious dietary deficiencies. This factor is responsible for prolonged healing time, low resistance, and, therefore, wide-

spread secondary infection. Thus, greater demands are probably made on surgical nurses than their counterparts on other services. However, their techniques, particularly those of asepsis, are poor, and this compounds the problem.

In the operating room the surgeon has to almost beg for instruments, and needless delay prolongs operating time. Many of the nurses appear nervous during the procedures. However, it should be mentioned that the staff is small and overworked because of the large patient load. Certain individuals are exceptional, but the over-all picture leaves much to be desired. Fortunately, the surgeons are sympathetic and understanding, since they, too, are overworked owing to personnel shortages and poor equipment.

As is true of many hospitals in the United States, a large number of nurses are employed as trained anesthetists. Although Korle Bu and other large hospitals have a physician-anesthetist in charge, most of the smaller hospitals have only nurse-anesthetists on the staff. They seem dedicated to duty and are highly efficient members of the surgical team. Although males predominate in the field, there was no indication that females are limited.

A comment about male versus female nurses. Interpersonal relations are good between the sexes. The male nurse, as would be expected, is more aggressive than the female nurse, but in those situations where a female is in charge one could note no dissatisfaction among the male staff nurses. Male nurses seem to be highly desirable, since orderlies are few in number. Thus, in addition to regular nursing duties, the average male nurse performs work usually reserved for orderlies. Some female nurses perform these additional duties also.

#### GENERAL MEDICAL CARE

Although we were unable to visit most of the general hospitals, we believe our-

selves able to interpret general medical care in light of our experiences at Winneba and Korle Bu Hospitals.

The day begins at 8 A.M. Monday to Saturday, ends around 5 P.M. weekdays and noon on Saturday at both hospitals. This is more theoretical than factual at Winneba, since surgery may keep one through the lunch hour, thus prolonging clinic time or causing one to remain through 9 P.M., only to be called back later in the night. The pace was hectic, but we found the work enjoyable, since each day enriched our knowledge greatly.

Korle Bu is located in Accra and is a county-like hospital of around 350 beds. It is composed of a series of two-storey interconnecting wings spread over an area equivalent to  $2 \times 2$  American city blocks. It has the typical departmental organization of American hospitals. Facilities and equipment are poor, and the personnel shortage is pronounced, there being only about 30 physicians on the staff.

There is a very large out-patient load, and we were told that around 1,000 patients per day pass through the hospital. Although infectious diseases and parasitic infections are extremely common, the use of modern drugs enables most to be treated on an out-patient basis. On the other hand, certain chronic diseases are common, and many are also treated on an out-patient basis. Hypertension and diabetes mellitus are notable in this regard.

Although many of the diabetics could be controlled on diet and/or oral medication, they are notoriously unreliable for reasons aforementioned. Thus, they are rarely under control from week to week. Interestingly, the less educated Ghanaian thinks an injection is the "ultimate in medical care." Despite a large out-patient attendance of diabetics, one finds a large number hospitalized. The same can be said for hypertensives.



Approximately 50 per cent of all beds on the medical service are occupied by patients with cardiovascular diseases, and of these approximately 80 per cent are suffering from hypertension and/or complications of same. Surprisingly, the majority of the hypertensives have the malignant variety, and the age group most affected is age 25-40 years. A young adult male patient admitted in coma is assumed to have hypertensive encephalopathy unless proved otherwise, and at post mortem the diagnosis is frequent.

We were impressed by the large number of patients with chronic diseases other than the two discussed above. Others deserving mention are endomyocardial fibrosis of the heart, primary carcinoma of the liver, chronic ulcers, and various neoplastic processes, especially genital.

The therapeutic approach to medical problems differs little from that in this country, the main differences in success obtained being related to the kind of patient with whom one has to deal. Of course, resistance is a very important consideration, but this is most noticeable in surgery.

Undoubtedly, dietary deficiencies play a major part in making the population susceptible to various diseases, but inefficacy of treatment is also understandable on this basis. For example, postoperative healing time is greatly prolonged owing to chronic undernourishment in most patients. It is unfortunate that the patient's diet improves but little in the hospital.

Inguinal hernias, a very important cause of morbidity, account for about 2,400 patients annually throughout the country. Surgical correction is usually possible, and an average of two operations per day are performed. (For some unknown reasons, the lower abdominal muscles are weak in the African, and this

is a problem with athletes, according to athletic officials). Significantly, if a male is lucky to avoid a hernia as a young adult he can expect one before age 40 years. Umbilical hernias are also quite common, but do not require surgical correction as often as inguinal hernias.

Other frequent operations are for urethral strictures, benign and malignant prostate disease, and intestinal obstruction of various etiologies. Volvulus of the sigmoid colon, resulting from redundancy (unknown etiology), is quite interesting. The surgeon finds dilatation distal to the point of obstruction, suggesting a neurogenic etiology. This is a common entity.

Although there is much chest pathology, chest operations are exceedingly rare, mainly because there is no thoracic surgeon in the country.

Inadequacy of equipment is most noticeable in surgery. However, we were very impressed with the excellent job being done in the face of tremendous obstacles. On the other hand, as aforementioned, we found surgical nurses far below their counterparts on other wards.

In general, personnel shortages, poor equipment, and poor diets cause the level of general medical care to be low at Korle Bu.

Essentially, Winneba Hospital is a miniature Korle Bu. It is located in the village of Winneba, 40 miles west of Accra. It is a 70-bed "mission type" hospital with four small buildings of one-story each, the largest being approximately 200 x 40 feet. The hospital is organized into a male ward and a female ward, surgery, medicine, pediatrics, and obstetrics-gynecology being separated only in regard to sex. As at Korle Bu, equipment is poor and facilities are taxed; but unlike Korle Bu, Winneba gives the patient better medical care despite the proportionately heavier burden.



There is only a two-man staff, but, more frequently than not, one man operates the hospital.

Winneba handles an average of 200 out-patients per day. There is little difference in the types of cases seen at the two hospitals. However, being in a rural area a proportionately larger number of infectious diseases come to Winneba.

At Winneba we were more closely involved in patient care and went on "trek" thrice weekly to even smaller villages. Apam, Senya-Beraku, and Swedru each have a small nurse-manned clinic. The nurses treat those cases they can manage but save the more complicated ones for the weekly visit or dispatch the patient to Winneba if need be. This is one method used to assist Winneba which serves scores of surrounding villages with an estimated population of about 100,000 persons. Winneba itself has about 3,000 people. In addition, each doctor is his own specialist at Winneba.

Regardless of location, however, medicine is challenging in Ghana. We visited Kumasi Central Hospital—350 beds and the most modern in the country—and other facilities. Everywhere we found the physicians practicing the art more than the science of medicine, since the latter would consume too much time. Yet, the patients do not seem to suffer greatly because of this approach; rather, factors mentioned elsewhere account for needless suffering. This was well illustrated by a father who brought his 2-day-old daughter to the hospital thirteen hours after having removed a sixth finger with a rusty knife. Infection and blood loss took her life.

#### SPECIFIC PROBLEMS STUDIED

*Public health.*—Ghana, like most of Africa, is chronically undernourished and highly susceptible to a variety of crippling and killing diseases. Although malaria, yellow fever, yaws, tuberculosis,

sleeping sickness, bilharziasis and many other communicable diseases take a heavy morbidity and mortality toll, by far the most important obstacle to good health is malnutrition.

Nutritional surveys show that starchy foods generally provide three quarters of the calories and may reach as high as 90 per cent of the diet. This pattern is established in early infancy. For example, an African mother will wean her child at the age of 18 months and then place it on the same high carbohydrate diet consumed by adults. Not surprisingly, therefore, an average of 30–35 per cent of children born alive die during the first 5 years of life. This high early infant mortality rate contributes greatly toward the low life span (40 years) of the average Ghanaian. In addition to decreasing the life span of the average Ghanaian, poor food habits contribute to a high morbidity rate.

Poor dietary habits in Ghana inevitably imply low protein diets. Again, children are profoundly affected—mainly by kwashiorkor, many cases leading to death. However, those that survive are crippled, since retarded growth, mental apathy, and fibrosis of the liver are end-results. Thus, sickness from other causes, when superimposed on the malnourished condition, becomes complicated and a prolonged course results.

The reasons for dietary deficiencies are many, but cultural patterns and beliefs as well as primitive methods of agriculture are the more important ones. These factors are controllable through better education and more efficient food production. Better food production will aid in overcoming the economic barrier, another very important obstacle. Again, however, one must stress the need for trained personnel, because more adequate data on food production and consumption are necessary. This includes agricultural products statistics, dietary

TABLE 1  
 IMPORTANT DISEASES IN GHANA\*  
 (Not listed in order of importance)

Parasitic:	Measles
Malaria, mainly due to <i>P. falciparum</i>	Yellow fever
Blackwater fever	Infectious hepatitis
Schistosomiasis	Rabies
Onchocerciasis	Pneumonias of all types
Loiasis	Chickenpox
Filariasis, mainly due to <i>F. bancrofti</i>	Yaws
Hookworm	Trachoma
Tapeworm	Chronic:
Ascariasis	Benign and malignant neoplasms
Guinea worm	Nontoxic goiter
Relapsing fever	Thyrototoxicosis with or without goiter
Trypanosomiasis	Diabetes mellitus
Scabies	Nutritional deficiency diseases
Infectious:	Asthma
Tuberculosis	Hypertension
Venereal diseases, mainly gonorrhea	Chronic (tropical) ulcers
Typhoid and paratyphoid fevers	Cirrhosis of liver
Brucellosis	The anemias
Dysenteries	Others:
Streptococcal sore throat	Nonmeningococcal meningitis
Diphtheria	Epilepsy
Whooping cough	Appendicitis
Meningococcal infections	Intestinal obstruction
Tetanus	Hernia
Anthrax	Gastroenteritis and colitis, age 4 weeks to 2 years
Acute poliomyelitis and complications	Schizophrenia
Acute infectious encephalitis and complications	Snakebites, mainly poisonous
Smallpox	

\* Source: Ministry of Health, Accra.

surveys, and the incidence of malnutrition and deficiency diseases, among other important factors.

The outlook for better protein nutrition among Ghanaians is improving. For example, fish production is on the increase and could provide an excellent source of protein-rich food. Fresh milk is being marketed locally, and scientific methods of poultry and cattle farming are being introduced. However, perhaps one of the most ambitious schemes involves agriculture. A group of Americans, working with Farmers Cooperatives, is attempting to grow soybeans locally. The importance of this project is twofold. First, a simple source of protein will be available to the average family; and, second, certain cultural difficulties will not mean rejection pending the effects of better education on dietary habits. Many other examples of progress could be cited, but the foregoing simply serves as background information for understanding the public health situation in Ghana (Table 1).

The disease picture in Ghana presents great variety. However, we shall not discuss each disease; rather, the more important in terms of public health will receive attention. To simplify matters we might establish disease categories. Thus, there are the chronic diseases, infectious diseases, and the parasitic infestations.

Undoubtedly, parasitic infestations are responsible for the highest morbidity rate. Foremost in this regard is malaria, but almost the entire spectrum is seen.

Malaria remains a formidable problem in Ghana. Many infants become victims during the first week of life. Those surviving inevitably become chronic cases. Although most cases are seen during the rainy seasons, one can expect one out of every four patients to be a malaria victim during dry seasons. No area of the country is safe from *Plasmodium falciparum*.

Fortunately, modern drugs are available for treating malaria, and for those who seek medical aid, anti-malarials are used with good results. Unfortunately, however, little attention is paid to preventive measures, as would be expected from earlier comments.

New means are being sought to control malaria. Thus, the World Health Organization is conducting trials with table salt containing anti-malarials. Preliminary trials show good results, and the method holds promise.

In Ghana, avoiding exposure to malaria, as well as other infestations, is very difficult. Climatic factors dictate wearing sparse clothing, the body is readily exposed to insects; hence, a vicious cycle is created. Similarly, not wearing shoes is common practice throughout the country. Children and farmers are particularly susceptible, but even the more westernized Ghanaian gets careless in

his habits. Health education, therefore, appears to be just as important as the technical problems involved in controlling parasitic infestations.

Turning to infectious diseases, one can see from the accompanying chart that this group continues to contain large numbers of specific diseases. Modern drugs are available to those patients presenting for treatment. However, tuberculosis presents many problems, since facilities for treatment are inadequate.

There are no sanatoria in the whole of Ghana. Thus, for all practical purposes there are no facilities available for in-patient treatment of that disease. Steps are being taken to build such facilities, but the problem of control remains.

Tuberculosis is almost as common as malaria in some areas of Ghana. This is particularly true in fishing villages. In such areas the people live in close, filthy quarters, which are generally made of thatched palm leaves. Since most of these areas are located right on the coast, one expects dampness and chilly night winds, especially during the equatorial winter (our summer). Farmers, urban laborers, and children between 1 and 16 years are other groups having a high incidence. The latter groups are somewhat more accessible to health authorities than fishermen. Fishermen put up a stiff battle against health authorities, even when the latter are aided by law officials. The government is moving cautiously to clean up fishing villages.

Most cases of tuberculosis at Winneba and Korle Bu were open cases, and at least 80 per cent of these were of the moderate or far advanced variety. Thus, inadequate facilities, coupled with the attitudes of patients toward medical care, make tuberculosis a very, very dangerous disease in Ghana. It is not surprising, then, that tuberculosis contributes greatly to the high mortality rate in that country.

Field units provide a partial answer to the problem of reaching the nonurban tuberculous patient. Health education also contributes to tuberculosis control programs. These same factors are operating in control programs for some of the other more important infectious diseases. Progress is being realized slowly, but there is hope.

As mentioned elsewhere, diabetes mellitus and hypertension are perhaps the more important "chronic" diseases. There are large, well attended clinics for both conditions conducted at Korle Bu. In Ghana, as in other parts of the world, etiological factors are nebulous. However, dietary habits, heredity, and overweight appear to play roles in the development of hypertension and diabetes mellitus.

The approach to therapy in each condition is similar to the ones used in America. However, in the case of outpatients special problems are encountered. These problems are related to health education. Thus, dietary control for diabetics is impossible because of ignorance on the part of the patient and/or ignorance of health authorities as to the caloric value of basic foods. Oral hypoglycemic agents have some value, but in the hands of the type of patient in Ghana full value is not realized. Similarly, out-patient hypertensives are rarely under control between clinic visits for reasons already given. It is seen, then, that the patient destroys himself and continually increases the workload of the already overworked physician.

The sketchy ideas given above offer some insight into the multitudinous public health problems facing Ghana. Since 1957 the infant nation of Ghana has made much progress in elevating the standard of health. However, the magnitude of the problems involved will remain until at least the next generation has come of age.

*Psychiatry.*—There are only two trained psychiatrists in Ghana for a hospital population of 1,550 persons. Both men are European-trained, and, interestingly, neither is a Ghanaian. Dr. Forster, the Chief, is a native of Gambia, whereas Dr. Maquire is from Western Europe. Two fulltime physicians round out the medical staff. A comment on paramedical personnel was given in the section on nursing.

In Ghana, facilities for the mentally deranged are very poor. There is only one mental hospital in the country for the treatment of what is considered only 10 per cent of those needing hospitalization. The Mental Hospital, located in Accra, is very depressing. The building is very old, dilapidated, poorly equipped and crowded. Some patients must sleep on the floor. Approximately 300 patients of the total hospital population are located at an Annex at Senchi-Adomi. A similar situation prevails there. Fortunately, construction of additional facilities is under way at Cape Coast.

A discussion with Dr. Forster and Dr. Maquire revealed that the apparent language barrier poses no problems in their work. They do not believe it necessary for a psychiatrist to be a native of the region in order to practice successfully. On the other hand, they believe some cultural orientation to be necessary. Thus, an understanding on psychiatric problems in Ghana demands some appreciation of tribal division and customs.

The people of a given region have certain beliefs peculiar to that region which have a bearing on the manifestations of mental disease. A geographical division of Ghana was given in an earlier section. Essentially, that division also serves as an ethnological grouping. The eastern and western regions constitute the old Colony area, but will be referred to as the southern area in this discussion.

Among other beliefs, the people in the southern area believe that blood is one of the most vital things in the world and that blood has soul. They consider thought and feeling to be centered in the heart, and maintain that it is the heart that thinks and passes the thought to the head and mouth. Further, these people believe that illness is caused by the prolonged absence of the soul from the body. Efforts to return the soul may be sought through a native doctor or by pouring libation to the god who is thought to have taken the soul away.

On the other hand, the people in the southern area have been in longest contact with Western civilization (about 500 years), and here one finds the largest number of educated persons who practice the Western style of life.

The people of the northern region are less developed than those of the south, are more primitive in their reactions, and inclined to be violent and turbulent.

The northerners believe a man's soul to live in his leather bag or in his grain store. They believe that when children die before the age of 16 years their spirits remain on earth, awaiting rebirth, and do not enter the spirit world as in the case of adults. It is felt that these spirits wander near their earthly homes where they may often be seen, or heard groaning and crying. If, upon meeting these spirits, one should flee in fear, he would be chased back to his village, and on arrival would be struck dumb with fright and may die shortly afterward. On the other hand, if the person would show a brave spirit, the ghosts would do no harm.

The Ashanti exhibit behavioral patterns representative of both the northern and southern areas. However, paranoia is also prominent in this area.

In Ghana, although the precipitating factors of mental disease are different, the forms are the same as those in

TABLE 2  
MAJOR TYPES OF MENTAL DISEASE  
IN MENTAL HOSPITAL, ACCRA, GHANA  
AUGUST 1960

Type	Number
Schizophrenic reaction	475
Senile dementia	35
Acute confusional psychosis	45
Epilepsy	37
Manic-depressive psychosis	36
Criminal cases (observation)	161
Alcoholism	30

Western society. Many varieties of mental disease were seen (Table 2), but schizophrenia was found to be the most common.<sup>1</sup> This finding is quite interesting in view of Ghana's being a society in transition.

Dr. Forster believes environmental factors to be "trigger actions" in precipitating mental illness rather than causal factors. He considers the greatest offenders to be superstitious beliefs in the influence of juju, the fetish, and witchcraft. Next in importance, he considers the stresses arising out of an unwholesome family system of dependency and poor economy, with privations of some of the necessities of life.

In a number of cases of schizophrenia he finds the observable precipitant to be an encounter with an alleged ghost, or fairies, or a pronouncement by a fetish priest that some evil will befall the patient, or a failure on the part of the patient to perform certain customary rites.

Hereditary factors, trauma, organic disorders (e.g., pituitary adenomas, malaria, fractures of long bones and pregnancy) were also implicated, but to a lesser degree. Yaws has never been considered as significant, and syphilis only slightly so.

In view of papers to the contrary, Dr. Forster was emphatic in stating that the psychological reactions of his patients differ in no way from the reactions of

similar groups of patients elsewhere in the world.

Schizophrenics in Ghana display disorders of the cardinal attitudes of mind and manner similar to other races. Dys-symbolic thought, dys-kinetic behavior, and paranoid thinking are all seen.

The environment plays a great part in the development and maturation of our mental life. In Ghana, the inveterate belief in superstition, the archaic ancestor worship, and the peculiar system of family dependency, are all factors which tend to modify the content of the symptom constellation. Yet, it is interesting that about 60 per cent of the schizophrenic patients come from the southern area, an ever changing area.

Migration to a changing environment charged with a new set of stresses, play a key role in the precipitation of mental disease seen in Ghana. This is particularly true of schizophrenia. The migrants leave the security of their villages and, upon reaching the more or less westernized south, find difficulties in adjusting. Although more detailed studies are necessary, this observation suggests that mental disease in Ghana, in several aspects, reflect the pattern of industrialization.

Industrialization is rapidly increasing in Ghana. There is a corresponding increase in the mental disease population. For example, the admission rate has risen from 3 per 100,000 in 1940 to about 12 per 100,000 in 1960. However, in part, this could represent increased awareness of the population for the necessity of modern medical treatment.

The approach to therapy differs but little from that in the United States. However, the time necessary for exhaustive treatment is obviously not available to the two hard-pressed psychiatrists in Ghana. Personnel needs are great in the area of psychiatry. The scarcity of such personnel in other parts of the

world offers little hope that aid is forthcoming. However, the growth of mental hygiene clinics in this country helps to provide a possible answer. Certainly, emphasizing mental hygiene will alleviate the problem. This approach was suggested to Dr. Forster, and he likes the idea.

*Pediatrics and obstetrics-gynecology*<sup>2</sup>.—Obstetrics-gynecology come closest to being at par with the American counterpart. This is true from most aspects considered.

Facilities are more extensive than would appear at first sight. This conclusion is based mainly on the fact that a fairly large number of qualified midwives are present in Ghana. Many of these midwives have private clinics, but the majority participate in District Midwifery Stations operated by the government. Also a large number are involved in operating the antenatal clinics at local hospitals. Thus, midwives play a vital role in the field of obstetrics.

Registered midwives do all normal and breech deliveries. They deliver about 3,000 babies per year at Korle Bu Hospital, but, as implied above, many more are delivered in the extramural stations. At term, those mothers between gravida two and gravida five are delivered at the district midwifery stations where possible, while primigravidas and those beyond gravida five and delivered at the hospital, since the incidence of complications is greater in this group. Senior midwives perform all episiotomies and only when necessary—not routinely as is true at many American hospitals. However, suturing the incision is the responsibility of the staff gynecologists.

District midwives operate daily antenatal clinics at the larger local hospitals. They are very successful in educating the mothers, considering the wall of ignor-

<sup>2</sup> Based on observations at Korle Bu unless otherwise stated.



ance they must scale. This activity contributes greatly to saving the time of the medical staff.

There is only one qualified obstetrician-gynecologist in Ghana. He and his three-man "residency staff" handle all gynecological matters and the complications of pregnancy.

Ruptured ectopic pregnancies account for a large percentage of complications. Interestingly, though many of the patients enter the hospital in shock of long duration, most survive. This is even more striking when one considers the shortage of blood for transfusion. To overcome this difficulty, the technic of auto-transfusion is employed. Here one removes the blood from the hemoperitoneum, mixes it with an anticoagulant, stirs while crushing clots, filters it into a bottle, and administers it to the patient. There is no reported mortality, and we witnessed no abnormal reactions.

The major gynecological problems appear to be essentially the same as those encountered in this country, and the therapeutic approaches differ but little.

Despite the good picture of obstetrics-gynecology presented, much remains to be done in this area. In the main, needs are in the field of spreading modern medicine to those unfortunate mothers who choose the path that leads to untrained midwives and the "witch doctor." In both cases ascending infection is the usual complication. Many of these patients develop sterility. This poses many problems beyond the immediate ones for the mother. In a broad way, the most important problem is economic; for economic success in rural areas is based on the number of offspring. Thus, many of these mothers will seek proper medical attention when they begin to suspect "failure" among "witch doctors." Accordingly, Sterility Clinics are conducted to determine whether medical science can be of assistance. Fortunately, a large

TABLE 3  
MATERNITY WARDS, KORLE BU  
1958 Statistics

Admissions:	6,330 adults
Deliveries:	3,553 total 3,009 normal 120 assisted vaginals 424 cesarean sections
Out-patients (Korle Bu)	18,869 antenatal 7,421 postnatal 1,245 gynecological
Out-patients (Extra-mural Clinics)	15,824

number of mothers meet with success.

The main problem in pediatrics is malnutrition. Kwashiorkor is perhaps the most commonly seen variety, but almost all others are frequent. Veno-occlusive disease of the liver is thought to be responsible for many of the latter cases, but owing to the personnel shortage there is little or no time for investigation. The usual childhood diseases are seen in abundance, and the mortality rate is relatively high. Although malaria is responsible for about 75 per cent of the parasitic infestations, most of the others, especially hookworms, are common. There were thirteen cases of cancrum oris at Korle Bu, but fortunately the surgeons are doing an excellent job of plastic surgery.

Future generations will be profoundly affected by progress in pediatrics. The problems are many, but there is cause for hope.

#### CONCLUSION

The Ghanaian people face many problems in their drive to attain a higher standard of living. Obviously, a healthy population is one of the key determinants of this goal. At present, disease is widespread, and superstition and ignorance

stand in the way of defeat by modern medicine. Although results are being slowly realized through education and other measures, personnel shortages and poor equipment continue to hamper most progress.

Solid progress is being made in building additional hospitals, but improvement of the plant and equipment of existing ones are equally important. Prospects seem good that a medical school will be built in the not-too-distant future. Establishing a medical school would go a long way toward alleviating Ghana's most urgent need—additional physicians.

Despite positive ideas of its own, Ghana still needs the assistance of the older, more experienced industrial countries. In this regard, it was pointed out to us on several occasions that assistance from the United States is the most desirable. However, there are some obstacles in the way of greater cooperation between the two countries.

In the main, insufficient information on both sides poses the greatest problem. The Ministry of Health has no official information as to the nature of medical schools, postgraduate training programs, licensure, health organization, and medical practices in the United States. Sadly, the Health Officials at our Embassy do not have such information on hand. We have made arrangements to solve this problem.

Unfortunately, misinformation about the American physician and monetary matters has caused the government to ignore him in appeals for medical personnel. Some of these misconceptions were cleared up during conferences with the Minister; others will be cleared up through information brochures.

An American physician wishing to serve in Ghana would find a hospitable group awaiting him. If we can use our experiences as a guide, he will be shown great respect socially and professionally.

Our mission to Ghana was far more successful than envisioned. We learned a great deal unobtainable in the United States, shared our knowledge with the Ghanaians, fostered good will, and obtained useful information and materials for certain agencies back home.

Much of what we learned has been given in preceding pages, but we continue our quest for knowledge in regard to veno-occlusive disease of the liver. We were able to secure certain plants thought to be etiologically important in that disease. Thus, in cooperation with the Departments of Pharmacology and Medicine, Howard University, and Pharmacodynamics, FDA, we will attempt to isolate the active principle of "bush tea," and *Heliotropium indicum*.

We are grateful to the Armed Forces Institute of Pathology and the State Department for arranging shipment of the plants, and specimens of primary liver carcinoma, jaw sarcoma, endomyocardial fibrosis of the heart, liver and pancreas from kwashiorkor, Hodgkin's lymph nodes, malarial blood smears, stool specimens of various parasitic infestations and a redundant sigmoid colon. As aforementioned, these specimens and all data will be made available to the appropriate agencies.

Finally, our most lasting impression is that the Ghanaian people are extremely warm and kind. They are aware of their needs and are making solid progress toward realizing a better life. Government officials and plain citizens will welcome anyone wanting to contribute to that goal. Our experiences suggest that such persons will have rewarding experiences. For us, we acquired many new friends, and anticipate returning to Ghana (or some other underdeveloped area) in the hope that some small contribution can be made to the advancement of a less fortunate segment of humanity.

## Abraham Flexner (1866-1959) and Medical Education

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Abraham Flexner had unusual influence on modern medical education. He was not a physician, nor had he ever taught in a medical school. He was an educational researcher and foundation executive; but his studies in medical education in 1910, 1912, and 1925 came at propitious times to effect wide reform. This article attempts to describe Flexner's contributions to medical education, to identify his research methods, and to evaluate the influence of his writings in this area.

Flexner's father, a Jewish immigrant from Bohemia, had made a precarious living as an itinerant peddler in the Southern states and had finally settled in Louisville, Kentucky, where Abraham was born November 13, 1866. The sixth of nine children, young Flexner attended the Louisville public schools and worked part-time in the Louisville library. Financial help from his older brother Jacob, who owned a drug store, enabled Flexner to attend the Johns Hopkins University in Baltimore. Here in America's first modern graduate university, then in its first decade under the guiding genius of President Daniel Coit Gilman, Flexner first came into intimate contact with thorough scholarship and exacting research.

By concentrated study in the classics, Flexner completed the requirements for the bachelor's degree in 2 years, from 1884 to 1886. He taught in the Louisville High School from 1886 to 1890 and operated his own private college preparatory school for boys from 1890 to

1895. Something of the achievements of "The Flexner School" can be noted in a complimentary letter from Charles W. Eliot, President of Harvard, expressing admiration for the early entrance age and rapid progress of Flexner's boys in that college.

Flexner married in 1898, and it was Mrs. Flexner, later a well known playwright, who induced him to give up his school for graduate study. Flexner went to Harvard for his master's degree from 1905 to 1906. He studied psychology under Hugo Münsterberg, Edwin Holt, and Robert Yerkes; philosophy under Josiah Royce; and science under George H. Parker at the Agassiz Museum. He also studied brain anatomy under his brother Simon Flexner at the Rockefeller Institute for Medical Research in New York. The next year, 1906 to 1907, he went to Europe. At the University of Berlin he studied psychology under Karl Stumpf and higher education under Friedrich Paulsen. At Heidelberg in the summer of 1907 he wrote his first book, *The American College*.

This book criticized practices which Flexner had observed at Harvard: the elective system, the lecture method, and the use of assistants to instruct undergraduates. Most American college graduates of 23, he noted, were inferior to German students of 20. Many pupils whom he had prepared well for Eastern colleges, he found, had lost rather than gained enthusiasm for scholarship during their college years.

Few read this book, but among these few was Henry S. Pritchett, President

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of the Carnegie Foundation for the Advancement of Teaching, founded in 1905. On his return from Germany, Flexner, seeking work, introduced himself to Pritchett. The foundation executive let Flexner read a speech of his similar, in criticism, to Flexner's book. At a second meeting Pritchett asked Flexner if he would care to make a study of medical schools. Thinking that he had been mistaken for his brother Simon, Flexner explained who he was. Pritchett replied, "That is precisely what I want. These professional schools should be studied from the viewpoint of the educator. I know your brother. This is a layman's job."

When Pritchett presented Flexner's name to the Carnegie Board of Trustees, there was a difference of opinion over the fitness of a layman to study medical schools. Pritchett persisted, stating to the board that he must be free to choose his own associates and that he would assume full responsibility for Flexner's competency. Reluctantly the board gave its approval. Flexner was to receive a salary of \$3,000 a year and full traveling expenses.

A little known book of criticism and a chance meeting with Pritchett had launched Abraham Flexner on a new career. The stage was set for an investigation which was to become something of a landmark in the history of modern medical education. Flexner was then 42.

He began by reading widely in medical educational literature. Cooperating with the American Medical Association, he conferred with its officers in Chicago. He also read the reports of the A.M.A.'s Council on Medical Education, which had been concerned about upgrading medical schools since its formation in 1904.

Realizing that the Johns Hopkins Medical School was one of the best modern medical schools in the country, Flexner studied its management and consulted

with its staff. He also consulted with his physician brother Simon and his staff at the Rockefeller Institute for Medical Research.

Flexner used the following criteria to measure medical schools. He examined entrance requirements to see if these assured adequate preparation and successful completion of the program. He gauged the size and professional training of the faculty to ascertain whether it gave the major portion of its time to teaching and research. He determined the income of schools from endowment and fees to see if this amount assured stability and growth. He looked for laboratories adequately equipped to provide sound instruction for the first 2 years in the preclinical branches of medicine. He ascertained the relationship between the medical schools and affiliate hospitals to note whether free access to beds was available for trainees. He examined the manner of appointment of physicians and surgeons in affiliate hospitals to learn if they had the requisite time to be teachers and researchers in clinical cases.

Flexner investigated each of the 147 medical schools in the United States and each of the seven medical schools in Canada. His pattern was to spend a short time at each of a half-dozen or so schools in one locality and return to New York to write up his notes. These reports he submitted to Pritchett for approval. Flexner also sent summaries of his reports to the deans of the respective medical schools to give them a chance to correct any misstatement of facts.

The reactions of the heads of the medical schools were mixed. Some were convinced, despite Flexner's attempts to dislodge the idea, that a Carnegie grant would follow his visit. Some received him cordially; others were evasive. Some were hostile; a few attempted subterfuges. At one school Flexner was kept from entering locked doors marked

"Anatomy," "Physiology," "Histology" and the like. He left the dean at the railroad station, purposely missed his train, returned to the school at night, and by bribing the janitor opened the locked doors to find that behind each was a classroom without equipment.

The result of Flexner's year-and-a-half study appeared in 1910 as Bulletin No. Four, entitled *Medical Education in the United States and Canada*. The report surveyed the history of medical education in both countries and summarized his findings of their medical schools. He also listed the facts about each school separately.

Flexner found entrance requirements for admission to medical schools to be low or nonexistent. Only Harvard and the Johns Hopkins University required a college degree for entrance. Fourteen other schools required 2 or more years of college work. Fifty schools required a high school education. Eighty-nine schools asked only "the rudiments or the recollection of a common school education." The teaching staffs of 139 schools were made up of physicians in local practice. As part-time professors with full-time local practices, they had less than sufficient time for teaching and research. These 139 schools had either no laboratories and libraries or inadequate ones. Of the total 155 schools only 50 were integral parts of universities. The schools Flexner found to be motivated primarily by profit, gave inadequate classroom instruction, neglected laboratory and clinical work, and did not provide for their trainees free access to hospital beds.

In his introduction to Flexner's report Pritchett placed the blame for the plight of medical education on the large number of competing commercial medical schools which had by unethical advertising drawn unprepared youths into medicine. In disregard of the public welfare these

schools had over-produced medical practitioners, many of whom were ill trained.

The report received immense publicity and produced something of a sensation. Flexner was accused of misrepresentation and threatened with lawsuits, but he let the facts speak for themselves. He stood his ground, and Pritchett backed him up. When the recrimination of charge and countercharge died away, the response amazingly enough was a positive one from most of the medical profession, the faculties of medical schools, and the state boards of medical examiners. Weak medical schools which had been operating mainly for profit closed their doors. Some schools near one another pooled their resources in order to survive. Seven schools in Louisville became one. Fifteen schools in Chicago consolidated into three.

Flexner's report brought to a head the reform movement which the A.M.A.'s Council on Medical Education had pressed for since 1904. Where the council's investigators, who were physicians, had necessarily been tactful with their professional colleagues in evaluating medical schools, Flexner as a free agent had obtained the facts and appraised them publicly and without fear.

Flexner's report was incisive and bold. In his chapter on "Reorganization" Flexner wrote, "The physician is a social instrument." He continued in this vein: And as disease has consequences that immediately go beyond the individual specifically affected, society is bound to protect itself. . . . It matters not that the making of doctors has been left to some extent to private institutions. The state already makes certain regulations; it can by the same right make others. . . . The medical school is a public service corporation. It is chartered by the state; it utilizes public hospitals on the ground of the social nature of its service. The medical school cannot then escape social criticism and regulation. It was left to itself while society knew no



better. But civilization consists in . . . gains won by science and experience; and science and experience have together established the terms upon which medicine can be most useful. . . . Society forbids a company of physicians to pour out upon the community a horde of ill trained physicians.

While the publication of Bulletin No. Four was having its effect on medical schools, it had several consequences for Flexner. Realizing belatedly that his study should have been preceded by one on European medical schools, he received permission from Pritchett for a companion study, *Medical Education in Europe*, published as Bulletin No. Six in 1912 and based on his research in England, Germany, and France during 1910 and 1911. Flexner found European secondary schools, particularly in Germany, superior to those in America for college and medical school preparation. He favored the European emphasis on combining teaching and research in clinics and laboratories. In German medical schools he found enforced and adequate entrance requirements, a close relationship between laboratories and clinics, teachers who were professors and not practicing physicians, and an atmosphere which held research in high esteem. In French medical schools he admired the free access given to medical students to hospital wards.

Another important consequence of Flexner's initial study led to an innovation in medical schools whereby chairs in clinical subjects were endowed so that professors were relieved of the necessity of carrying a private practice and could devote their full time to clinical research. This "full time" innovation came about through the interest of Frederick T. Gates, director of the Rockefeller foundations.

Gates invited Flexner to lunch and told him, "I have read your 'Bulletin Number Four' from beginning to end. It is not only a criticism but a program." Flexner

replied that he had intended it as such, that he had included two maps in his report, one showing the 155 medical schools then functioning, and the second showing the location of the reduced number of 35 schools properly endowed and conducted by well trained personnel. "What would you do," Gates asked, "If you had a million dollars with which to make a start in the work of reorganizing medical education?" Unhesitatingly Flexner replied, "I should give it to Dr. Welch," explaining that only at the Johns Hopkins Medical School under Dr. William H. Welch's direction would a million dollars result in a model advance for other medical schools to emulate.

At Gates' suggestion and with Pritchett's approval Flexner went to Baltimore and broached the subject to Welch. At dinner Welch brought Flexner together with two members of his staff, Dr. Franklin P. Mall and Dr. William S. Halstead. It was Mall who suggested that the most fruitful use of one million dollars to reorganize medical education would be to endow clinical chairs on a full-time basis. The idea was not new. It had been suggested a few years before in a speech by Dr. L. F. Barker, then a colleague of Dr. Mall at the University of Chicago. Mall himself attributed the earliest origin of the idea to his teacher of physiology at the University of Leipzig, Dr. Karl Ludwig.

To appreciate the consequence of the "full time" scheme, it must be remembered that the leading men in medical education received only nominal salaries from their medical schools. They had to make their living by private practice. To free them for full-time research in medical laboratories and clinics would help to hasten new discoveries and new techniques.

It was this "full time" plan that Flexner put before Pritchett and Gates. Opposition at the Johns Hopkins Medical



School was overcome with some difficulty, for this was a radical departure from long established practice in Europe and the United States. The public too was initially opposed to the plan because it would take from them the direct services of the best medical practitioners. However, by 1913 \$1,500,000 was given to the Johns Hopkins Medical School to initiate the "full time" scheme. The plan did, in fact, become a wholesome model for other medical schools and has since benefited medical research and medical education.

An important by-product of Flexner's work in urging adoption of the "full time" plan was that it began for the first time the channeling of foundation money to medical education. Between 1919 and 1921 the Rockefeller Foundation gave the General Education Board \$45,000,000 earmarked for medical education. After Flexner joined the General Education Board in 1913, he provided the leadership in channeling foundation aid to medical education. It is estimated that he secured for medical schools no less than a total of \$100,000,000.

One final thing must be mentioned in reviewing Flexner's influence upon medical education. He broke the precedent of foundation executives' being unwilling to aid state university medical schools. Gates differed strongly with him in this. In winning over the objections of Gates, Flexner showed that he understood the progressive forces which were making state universities important social institutions and scientific laboratories.

Up to 1923 the General Education Board and the Rockefeller Foundation had limited their medical appropriations to privately endowed institutions. Flexner was asked that year to help the University of Iowa move its medical school to a site where a new hospital with the necessary laboratories was to be built. Without help this move would not have

been possible for many years. Flexner saw that unless the aid were given, medical education would be retarded in this key section of the Middle West. He proposed a joint grant by the General Education Board and the Rockefeller Foundation.

In a stormy session of the Rockefeller board meeting, Gates declared that state universities were creatures of politics, subject to dictation on economic and scientific matters. Free and private institutions he would help but not public institutions. Flexner pointed out that the important private schools were mainly in the East and that to bolster one important midwestern medical school would stimulate healthy competition among other public institutions. Flexner's views prevailed. Within a short time after the grant was made, Missouri, Michigan, Minnesota, and Wisconsin entered into friendly rivalry to overtake Iowa's lead in medical education.

Flexner made significant contributions in fields other than medical education. In 1912 and 1913 he produced for the Rockefeller Foundation an important sociological study entitled *Prostitution in Europe*, which was widely translated and which in turn influenced a companion study by Raymond B. Fosdick entitled *European Police Systems*. For the General Education Board he helped plan an important series of public school surveys in Maryland, Delaware, Virginia, North Carolina, Kentucky, and Alabama.

Following retirement from the General Education Board in 1928, Flexner gave important lectures at Oxford University and elsewhere; wrote his most important book on higher education, *Universities: American, English, and German*; and climaxed his remarkable career by founding the Institute of Advanced Research at Princeton, New Jersey. For this last institution, of which he was the first president, he secured as its first

professor Albert Einstein, who took up permanent residence in the United States.

Mrs. Flexner died in 1955, and Flexner moved from New York to suburban Washington, D.C., to be near his married daughter. Here he died on September 21, 1959, at the age of 93.

Abraham Flexner overcame a background of impoverished ambition to rise to eminence. The great graduate university which Daniel Coit Gilman had created at Johns Hopkins inspired Flexner in his quest for truth and gave initial direction to his life. His respect for scholarship and his meticulous research abilities were sharpened by European study, particularly in Germany.

However, Flexner's outstanding ability lay in his power to uncover facts, seize upon ideas, and correlate these around a central pattern leading to improvement. Flexner came at the right time in the history of modern medical education. The reforms he effected were already in fermentation. What was needed was an incisive report. Flexner's studies provided the needed stimulus.

#### REFERENCES

##### Books

1. FLEXNER, A. *The American College*. New York: Century Company, 1908.
2. ———. *Daniel Coit Gilman, Creator of the American Type of University*. New York: Harcourt, Brace, 1946.
3. ———. *The Burden of Humanism. The Taylorian Lecture*. Oxford: Clarendon Press, 1928.
4. ———. *Do Americans Really Value Education? The Inglis Lecture*. Cambridge: Harvard University Press, 1927.
5. ———. *Funds and Foundations, Their Policies Past and Present*. New York: Harper, 1952.
6. ———. *Henry S. Pritchett, A Biography*. New York: Columbia University Press, 1943.
7. ———. *I Remember*. New York: Simon and Schuster, 1940.
8. ———. *Medical Education, A Comparative Study*. New York: Macmillan, 1925.
9. ———. *Medical Education in Europe*. New York: Carnegie Foundation for the Advancement of Teaching Bulletin No. 6, 1912.
10. ———. *Medical Education in the United States and Canada*. New York: Carnegie Foundation for the Advancement of Teaching Bulletin No. 4, 1910.
11. ———. *A Modern College, and A Modern School*. New York: Doubleday, Page, 1923.
12. ———. *Prostitution in Europe*. New York: Century Company, 1914.
13. ———. *Universities; American, English, German*. New York: Oxford University Press, 1930.
14. FLEXNER, A. and BACHMAN, F. P. *The Gary Schools: A General Account*. New York: General Education Board, 1918.
15. ———. *Public Education in Maryland*. New York: General Education Board, 1916.
16. FLEXNER, S., and FLEXNER, J. T. *William Henry Welch and the Heroic Age of Medicine*. New York: Viking Press, 1941.
17. FOSDICK, R. B. *Chronicle of a Generation, An Autobiography*. New York: Harper, 1958.
18. ———. *European Police Systems*. New York: Century Company, 1915.
19. ———. *The Story of the Rockefeller Foundation*. New York: Harper, 1952.
20. *General Education Board. Public Education in Delaware*. New York: General Education Board, 1919.
21. ———. *General Education Board, an Account of Its Activities, 1902-1914*. New York: General Education Board, 1915.
22. SAVAGE, H. J. *Fruit of an Impulse; Forty-five Years of the Carnegie Foundation, 1905-1950*. New York: Harcourt Brace, 1953.

##### Obituaries

23. *Louisville Courier-Journal* (Louisville, Kentucky), September 22, 1959.
24. *Tulsa World* (Tulsa, Oklahoma), September 22, 1959.
25. *The Washington Post* (Washington, D.C.), September 22, 1959.

# The Efficiency of Television as Applied to the Use of Laboratory Demonstrations in Teaching\*

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## INTRODUCTION

The use of closed-circuit television in the teaching of various subjects has now come to pass as an established routine, but it still remains to quantify some of its effects. An analysis of the objective research done in this field allows it to be stated that "television can be employed without serious reservation toward solving the difficult problem of quantity in colleges and universities" (1). To date such a generalization has been based upon studies done with undergraduate populations in such areas as the teaching of General Psychology, Introductory Sociology, Elementary Meteorology, and Music Appreciation.

There is a particular need to evaluate the use of television in the presentation of the traditional laboratory demonstration. Such demonstrations are usually limited to a small audience and must be repeated several times in order to be

shown to any significant number of students. In many Medical Schools certain demonstrations are omitted because the cost of their repetition would be prohibitive. The use of closed-circuit television to present this material to a large number of students would immediately free both the instructor and the curriculum of many burdensome hours of repeat instruction and at the same time make it possible to schedule demonstrations which would not be otherwise possible. Therefore, in the laboratory sciences television becomes the means not only for making more teaching time available but for enriching the curriculum.

However, the question still remains whether or not the use of closed-circuit television for presentation of a laboratory demonstration would diminish the quality of the presentation and create an inferior teaching situation. As a means of testing such a hypothesis the following study was performed.

## PROCEDURE

Two groups of sophomore students at the University of Mississippi School of Medicine were matched for academic class standing. One group of sixteen students was placed in a laboratory and exposed to a demonstration of "The Effects of Pharmacological Agents on Contraction of the Nictitating Membrane." This is a standard laboratory presenta-

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Appreciation is expressed to the following for their assistance in presenting this television demonstration: Dr. Peter Cervoni, and Mr. James Nelson, Dept. of Pharmacology; Mr. William Breland, Dept. of Psychiatry.

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tion in the pharmacology course and is performed on a live cat. Another group of 44 students was placed in an adjoining classroom and shown the same demonstration on two television monitors. One monitor was focused on the instructor and/or the animal, while the other remained focused on a kymograph which continuously recorded the response elicited from the animal. By means of a 2-way voice circuit controlled by an assistant in the television classroom, it was possible for both groups to ask questions of the instructor during the session. Immediately following the demonstration both groups were administered a 44-item quiz covering the material presented. This test was unstandardized but contained all the material considered relevant by the instructor. All test items were required to meet the usual standards for the construction of effective test items.

#### RESULTS AND DISCUSSION

The laboratory group produced a mean score of 35.00 and a standard deviation of 3.06; the television group a mean score of 35.75 and a standard deviation of 3.00. This difference not only fails to approach statistical significance, but it is striking that the two distributions of test scores are so nearly alike.

Therefore, within the limitations of this study it is possible to conclude that the use of closed-circuit television in medical education does not detract from the quality of the teaching situation.

In addition to these objective findings, several factors became apparent during the study. The most important of these was that various kinds of laboratory equipment do not televise well. This is

especially true of such things as small, light-colored electrodes, and fine wires. The students in the television group felt compelled to repeatedly inquire as to the exact nature of some of the equipment used. This served to point up the fact that it cannot be assumed that simple viewing is always equivalent to the live event. It seems that having direct communication with the instructor helps compensate for any unforeseen limitations of any particular presentation. In the future greater care will also have to be given to such technical problems as contrast, the viewability of different kinds of equipment, etc. At least some production techniques will have to be developed which will serve the particular needs of this kind of presentation.

#### SUMMARY

The hypothesis was tested that the use of closed-circuit television for the presentation of certain laboratory demonstrations would not modify the teaching value inherent in the traditional small-group, face-to-face presentation. A small group of medical students was presented a laboratory demonstration in pharmacology while actually in the laboratory; a large group viewed the same presentation on television. Both groups were given an examination covering the material presented. There was no significant difference between the two distributions of test scores which were obtained.

#### REFERENCES

1. CARPENTER, C. R., and GREENHILL, L. P. An Investigation of Closed Circuit Television for Teaching University Courses Report. No. Two, The Pennsylvania State University, Spring, 1958.

# MEDICAL EDUCATION FORUM

## Editorials

### THE INTERNSHIP STUDY REPORT WITH COMMENTS ON SERVICE, PRIVATE AND "SECRET" PATIENTS

The recent ferment in medical education has brought to the surface few problems more controversial than the internship. It stands in a unique position. As the first of three or four years of graduate training for the average doctor, it marks the mid-point of his formal medical education—but responsibility for it is not legally or even traditionally assigned to the university. Less than 40 per cent of the internships are in university-associated hospitals. As the young doctor's first contact with the community's needs for service, it has been the focus of a struggle for possession between those who conceive of it as graduate education and those who need the assistance of additional medical personnel to provide optimal patient care. It has suffered from a lack of integration with other plans of medical education. Too often it is a hiatus in what should be an educational continuum. It is not surprising that disparate suggestions regarding a solution to this problem have been offered.

This issue of the *Journal* focuses attention on the internship through the publication of the report of a study conducted by the Committee on Internships of the A.A.M.C. This study was not intended to offer a comprehensive critique. Indeed, it could not, for it was concerned only with the internship in hospitals associated with medical colleges. Therefore, the reader who is most interested in the "intern shortage" or in the important problem of staffing the community hospital will not find here useful suggestions. Since the study was concerned with the internship in the university hospital, it emphasizes this important year as an educational experience.

The results of the study are both disturbing and hopeful. At its best the internship is conceived and conducted as a closely integrated program both filling important gaps of prior medical education and preparing for additional training to come. It can be designed to take advantage of the remarkable milieu of the academic teaching hospital. At the other extreme, it can be a supernumerary year, largely concerned with catering to the needs of undergraduate education, on one hand, and to the needs of technical, clerical, and nursing assistance in the residency program on the other hand. Too often, the internship observed during this study reflected a spectrum ranging between these two poles.

Although the results of the study are explicit in the report published in this issue, this writer will presume to make a few editorial comments. Neither the Director of the Study, Dr. Richard Saunders, nor the other members of the Committee are responsible for these opinions.

First, the university hospital must continue to accept responsibility for the design and conduct of a proper portion of the internships in the country. Rather

than ceding or denying responsibility for this year of medical education, when offered in the university hospital, our medical schools should formally affirm and accept it. Planning and integration should be as carefully designed as for any other year of the educational curriculum.

Adequate evidence indicates that proper attention to the needs of the first year of graduate medical education will require a basic change in many of the so-called rotating programs and modification of some of the straight programs. Nevertheless, the wide range of differentiation of career plans of doctors at this stage of their education appears to justify a variety of programs.

Certain clinical disciplines have unique problems in providing challenging, responsible, educational experiences at this level. Nevertheless, careful self-appraisal and new planning can offer improved experiences in these fields.

Throughout the study, both interns and educators emphasized the importance of *responsibility* and active participation in patient care as the essence of the educational experience during this first year after graduation from medical school. This writer agrees with this thesis. Proper assignment of responsibility to house officers has become more complicated in the changing scene of modern medical economics. With participation of third party insurance carriers in the payment of medical care costs in all our hospitals, the number of so-called public or service patients has decreased markedly. Most such hospitals are experimenting in some way or another with plans for "utilization" of private patients in teaching programs. In some institutions this has been done with considerable success. The problem requires restating. There are three classes of patients in most of our university hospitals—service patients, private patients, and "secret" patients. The first is traditionally assigned to the "teaching" service. The indigent public or ward patient is rapidly disappearing. On university house staff services a corresponding larger percentage of insured patients are electing to accept the hospital staff rather than an individual as their physician. The "private" patient is one who has elected to have a single member of the attending staff direct or supervise his care. However, few patients requiring hospitalization in the university hospital can be cared for by a single physician. The wise attending physician knows how to assign responsibility, to observe his patients, to participate in his proper role as captain of the patient care team, to learn and teach while getting the most out of the remarkable advantages of the modern teaching hospital. Our problems in graduate medical education in university hospitals center around the "secret" patient. Often at his own insistence, he elects to go to a university hospital because of its reputation, but then prevents application of the advantages of the institution. Insistence on resort hotel facilities, imperious behavior toward the staff, and lack of understanding of the staff chain of responsibility make it impossible to provide the extraordinary service available. A key individual in this instance is the attending physician, who is in a position to explain the university hospital to his patient. Too often, university hospital staffs include members (sometimes not appointed by the medical college representatives) who do not understand this themselves, or who do not have or take the time to benefit from the advantages of the university hospital. Unfortunately, "secret" patients are not confined to private pavilions. In the poorly supervised, conflict-ridden house staff program, it is possible for immature, overly confident interns or residents to maintain "secret" patients on ward services. Fortunately,



the intern-residency relationship makes this infrequent. There is no place for the "secret" patient in our university hospitals.

At its best, the committee is impressed with the quality of the internship in our university hospitals as an educational experience. It is hoped that the report of the study that has led us to this impression will serve to strengthen this key year of graduate medical education.

E. HUGH LUCKEY, M.D.  
*Chairman, Committee on Internships,  
Residencies & Graduate Medical  
Education, 1955-1960  
Association of American  
Medical Colleges*

#### THE INTERNSHIP, N.I.M.P., AND THE NUMBERS GAME

Among the many problems that medical education is grappling with today, the internship would rank high on the priority list. But have we ever really grappled with it? We have looked at it, we have recommended changes in standards, but a real head-on collision has been avoided or averted. In this issue are presented two major contributions on the internship—by Saunders, concerning the University Hospital Internship in 1960, and the report of the ninth annual National Intern Matching Program.

The standards for approval introduced during recent years have been thoughtful and progressive. The requirement of E.C.F.M.G. will improve the caliber of the foreign graduates entering our intern programs. Yet the numbers game is still on—12,686 internships and 7,081 graduates. Who will be or who can be the winner?

The report of the Ninth Intern Matching Program shows that a powerful force is at work that will be felt with increasing intensity in the intern problem—the potential intern.

The report indicates that interns are moving in increasing numbers toward the hospitals with major teaching affiliations and, to a lesser degree, those with minor teaching affiliations. This fact will only fan the fires of controversy on the desirability of teaching hospitals offering internships. It is interesting to speculate on the reaction of senior medical students if they were told that they could only intern in hospitals not affiliated with medical schools. Perhaps the students would abolish the internship!

Each year the results of N.I.M.P. harden the lines between affiliated and non-affiliated hospitals. The results breed conflict between the medical schools and a large segment of the practicing profession. It is high time that the numbers game was banned—as it is legally—and the number of internships made compatible with the pool of qualified applicants, foreign and domestic.

JOHN Z. BOWERS, M.D.

## PROGRESS IN ISRAEL

The recent publication of a collection of reports on medical and biological research in Israel includes an interesting but too brief section on medical education.<sup>1</sup> Despite existence of the most favorable physician-population ratio in the world, 1:400, the unique health problems of Israel and the urgent need for research workers sparked the opening of a medical school in 1949. There are six applicants for each place in the freshman class. Classes include 60-80 students. The medical school is a part of the Hebrew University of Jerusalem and will shortly use the splendid new Hadassah University Hospital.

We can be proud that this facility was erected by Hadassah, the Women's Zionist Organization in America. This interesting publication supports the reports of rapid scientific and educational progress in Israel.

JOHN Z. BOWERS, M.D.

<sup>1</sup> "Medical and Biological Research in Israel," *Jerusalem Post Press*, 1960.

## Datagrams\*

### COMPARISON OF TUITION LEVELS BETWEEN 1941 AND 1959 FOR 42 SELECTED SCHOOLS IN TERMS OF ACTUAL DOLLAR AMOUNTS AND IN TERMS OF THE 1947-49 STANDARD DOLLAR EQUIVALENTS

Tuition has always been a major source of income for U.S. medical schools. As such, it has been necessary frequently to increase tuition charges in recent years so that this source of income could retain its relative position of importance in the financial structure of medical education.

Relating to the period from 1941 to 1959 this Datagram discusses these increases in tuition—including the variations which occurred with respect to private and public schools—from two points of view: 1) in terms of actual dollar amounts, and 2) in terms of the 1947-49 standard dollar equivalents.

Table 1 shows the percentage increase in average tuition between 1941 and 1959 for a selected number of schools including 26 private and 16 public four-year medical institutions.\*\*

Average tuition for private schools increased from \$482 to \$1,175. This represents a percentage increase of 144%. Average non-resident tuition of public schools increased from \$396 to \$948, or 139%; resident tuition from \$239 to \$541, or 126%.

As previously stated in Datagram, Vol. 2, No. 8B for February, 1961, the purchasing power of the U. S. dollar was subject to great variation during the period under consideration. To obtain a more meaningful comparison of tuition charges between 1941 and 1959, adjustment to a standard dollar becomes necessary. The Department of Labor, Bureau of Labor Statistics, selected one hundred cents as a dollar equivalent for the base period 1947-49. The 1947-49 dollar equivalents for each of the years under consideration were determined by multiplying the actual tuition charges by the reciprocal of the appropriate consumer price index as determined by the Bureau.

#### PERCENTAGE INCREASE IN AVERAGE TUITION BETWEEN 1941 AND 1959 FOR 26 PRIVATE AND 16 PUBLIC FOUR-YEAR MEDICAL SCHOOLS IN TERMS OF THE ACTUAL UNADJUSTED DOLLAR VALUES AND IN TERMS OF THE 1947-49 STANDARD DOLLAR EQUIVALENTS

TYPE OF SCHOOLS	IN TERMS OF UNADJUSTED DOLLAR VALUES			IN TERMS OF 1947-49 STANDARD DOLLAR EQUIVALENTS		
	1941	1959	% INCREASE 1959/1941	(1) 1941	(2) 1942	% INCREASE 1959/1941
<b>PRIVATE SCHOOLS</b>	\$482	\$1,175	144%	\$766	\$944	23%
<b>PUBLIC SCHOOLS:</b>						
NON-RESIDENT	396	948	139%	639	762	21%
RESIDENT	239	541	126%	380	434	14%

(1) RECIPROCAL OF CONSUMER PRICE INDEX \$1.39

(2) RECIPROCAL OF CONSUMER PRICE INDEX \$1.803

SOURCE: TUITION FOR 1959 FROM J.A.M.A. VOL. 171 PP. 1514-1515 (NOV. 15) 1959  
TUITION FOR 1941 FROM PERSONAL COMMUNICATIONS WITH INDIVIDUAL DEANS.

TABLE 1

\*Submitted by the Division of Operational Studies of the AAMC, 2530 Ridge Avenue, Evanston, Illinois.

\*\*These selected schools constitute a representative sample and are the same ones which are included in the comprehensive study, "Financing of Medical Education," now in progress at AAMC headquarters.

Referring again to Table 1, the effect of adjustment to a standard dollar in making meaningful comparisons of trend data is dramatically revealed. The percentage increase of 144% in the average tuition level of private schools based on actual dollar amounts becomes 23% when based on the standard dollar equivalent. The increase in average non-resident tuition of public schools reduces from 139% to 21%; that for resident tuition from 126% to 14%.

Figure 1 provides a graphic presentation of tuition levels for public and private schools in 1941 and 1959. Here tuition levels are represented in 1947-49 standard dollar equivalents. (For purposes of reference the average of actual unadjusted tuition for each category is shown at the lower margin of the chart and is marked with an asterisk. Numerals beside the horizontal bars in the chart indicate the number of schools having identical tuition charges.)

It is notable that, although the tuition of private schools shifted generally to higher levels between 1941 and 1959, the range between the highest and lowest level remained more or less unchanged.

On the other hand the range between the highest and lowest level of non-resident tuition in public schools narrowed considerably in 1959 over the earlier year—especially if the one high tuition charge is excluded. The range for resident tuition in public schools also narrowed but to a lesser extent.

In a current comprehensive study of medical school financing, it has been determined that between 1941 and 1959 tuition for *public schools* dropped from second to fourth position of relative importance as a source of income for basic operations. This fact can be attributed, to some degree at least, to the minimal changes in the levels of resident tuitions as revealed in this chart.

In 1941 tuition stood in second position of relative importance as a source of income for *private schools*. It retained the same position in 1959.

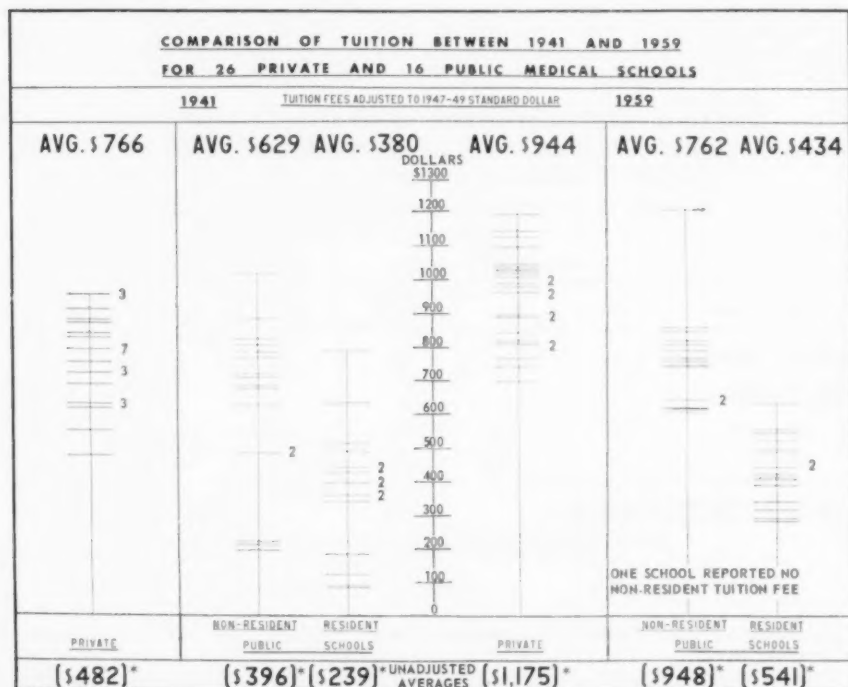


FIGURE 1

## Address

### THE ROLE OF MEDICAL EDUCATION IN PROMOTING INTERNATIONAL UNDERSTANDING\*

FRANCIS SCOTT SMYTH, M.D.†

Interest in health is universal; all countries and cultures recognize its importance. The viability and energy of a people are obviously translatable in terms of health; therefore, health becomes economically and globally significant. This is most obvious in these days of rapid transport and communication where relationships are close. The health sciences and the educational programs for the health professions, therefore, constitute a natural bond of interest. This interest is not unselfish—who knows, for example, but that without the understanding and exchange of information and technics, the Asian flu might not have swept from across the world if unchecked by vaccine.

Medicine enjoys an appeal as a biological science. Drawing from roots of several sciences (physics, zoology, chemistry), it has become increasingly important in the curricula of educational programs. Finally, if knowing life is a measure of education, then the field of medicine becomes one of the best cultural disciplines. It follows, then, that the field of medicine is also one of the best bridges between two widely divergent cultures.

In underdeveloped countries, acceptance of modern medicine may require some adjustment with indigenous folklore or caste or village protocol, but the benefits of modern medicine in antibiosis, preventive immunization, and surgical repair are so readily demonstrated as to overcome any initial suspicion or resistance. At the same time those countries with especially tropical or equatorial location offer a unique field for visiting scientists of the temperate zone. I do not refer to such diseases as malaria, yaws, and tuberculosis as to those related to yeasts, fungi, viruses, genetic factors, etc., all of which are challenging to the investigative mind. (One of our visiting teachers has reported on the altered reproductive cycle of batrachians in the tropics.)

Psychologically, the manner in which the University of California became involved is important. We were invited—we did not initiate the proposal, nor were we the first university to be invited. Let me relate the background:

In 1950, as Dean of the School of Medicine of the University of California, I became acutely aware of the number of foreign nationals who were seeking opportunities for advanced study in the medical sciences. Our American schools, while not devastated by war, had accelerated research programs and were unprepared to accept the responsibilities as leaders in medical education and research. Our facilities were crowded, and our own nationals, especially returned servicemen, taxed both faculty and accommodations.

\*Presentation at Forum on "Improving The American Image Abroad" of The National Citizens Committee for The World Health Organization, Inc., in San Francisco, November 2, 1960.

†Professor of Pediatrics and Coordinator, Airiangga University Project, University of California School of Medicine, San Francisco 22, Calif.

At a Christmas party in 1950 we entertained 42 foreign students from 21 different countries. These students were engaged in study programs that would fit them for the American scene. At the Association of American Medical Colleges I urged a more studied responsibility on the part of our universities, each to specialize in serving an area of the globe as we became better informed. I was rewarded by being asked to initiate my suggestion and to establish their Committee on International Relations in Medical Education, and shortly thereafter a formal invitation was extended from the University of Indonesia and its government to establish a program. While this was in accord with the idea of a more realistic program for the role of medical education, our initial reaction was one of surprise rather than pleasure.

We knew little about Indonesia—half a world away—and its institutions, language, and facilities. On their part, they had the mistaken idea that the United States had not only boundless material wealth but also a plethora of medical faculties eager to assume global responsibilities.

Without any commitment I visited Indonesia, where I was appalled with the magnitude of the problem: 1500 physicians to 80 million people, malnutrition, sanitation problems, tuberculosis, malaria, yaws, etc., etc. Yet, the determination of these ambitious Indonesians won my admiration and support. In my first reaction to the realities of the situation, I suggested to their faculty that they develop a substandard profession—i.e., high school graduates to be trained in nutrition, sanitation, inoculation. I was politely informed that they had tried such a scheme—the Mantri. When these male nurses (Mantri) went to teach their people the use of latrines or the need for smallpox vaccination, the villagers would listen only after their acutely ill—the lame, the halt, and the blind—had been treated. As a result, the Mantri were given simple therapeutics and became third-rate practitioners! "No," said the faculty, "we did not ask you, Dr. Smyth, to establish a School of Public Health. Our experience convinces us that the historical pattern must be followed, i.e., we must first have an able profession in the healing art, before we can develop a sound preventive, public health program."

I came back to the United States convinced that the University of California should undertake this task, despite the obstacles of red tape, the 12,000-mile distance, and profound differences in historical and cultural backgrounds. Not all the Regents of the University were impressed, nor were all the faculty. But we were encouraged by the China Medical Board, who underwrote the salary of Dr. Edward Schultz, then Professor of Pathology at Stanford, while Dr. N. Burbridge was given a commission in the United States Public Health Service and assigned as a teacher in Pharmacology at the University of Indonesia. These were our advance agents until the contract was signed and became operative on July 1, 1954. This contract was intended to be the instrumentation of a program by which the University of California furnished faculty and teaching aids to an institution which had been founded by the Dutch and modeled after the European curriculum. Change was not easily effected; there was skepticism on the part of the few remaining Dutch and suspecting critics among the Indonesians.

Nevertheless, having initiated the affiliation, the Indonesian leaders were willing to develop a workable affiliation by the initial trial and error technic. It is philosophically important to understand that we were not establishing an American school, such as Peking Union or the American University at Beirut, but



aiding the development of an Indonesian responsibility. This was not an adoption but an affiliation. The American Field Staff were visiting faculty who had been proposed by the University of California but invited and appointed by the Indonesian Dean as integral members of his faculty (and subject to recall if requested by the Indonesians).

To locate suitable personnel was not simple. Not only was there a shortage of doctors in the United States, but also of basic science teachers. Until recently, American universities were not in our foreign aid program, and they still do not make it easy for a faculty member to absent himself for a 2-year tour abroad. The University of California, however, now recognizes field service as a legitimate University pursuit, even though promotion committees do not adequately recognize this contribution in terms of academic advance.

American candidates for the field staff were, at first, often puzzled by the lack of a clearcut outline of duties. Actually, it was difficult to beyond saying that "under the Dean's jurisdiction, the appointee is expected to aid the teaching and administration in any way that was feasible." No two situations were alike—some positions, e.g., in pharmacology, represented a new and additional development in Indonesian medical education. As such, the American had to assume full responsibility for establishing and developing the department, its teaching program, laboratories, equipment, etc. For some Americans on the field staff, the position was more in the nature of being a consultant; still others replaced the Indonesian faculty member who was on leave for advanced study in the United States. Usually, where there was an incumbent Indonesian, there was a necessary period of observation during which the member of the field staff and his Indonesian counterpart became acquainted and reached the mutual trust on which the program could develop. Finally, there were those Americans who served in technical capacities and whose duties were not only to instruct laboratory technicians but also to introduce new methods and render technical service to a wide range of teaching departments.

A 2-year appointment, we believe, is ideal. While a few shorter periods of lectureships have been given, a longer tour of duty is essential for effectiveness for most field staff. This policy tends to favor the appointment of emeriti faculty—indeed, from both Government and other counsel, we were advised not to send "young men," who were more apt to pose a threat to their older colleagues in that they were too energetic in pursuing reforms. Our experience since then suggests that it is not a matter of age but attitude. We have had tactful, adaptable candidates in the younger faculty and we have had some contentious or senile emeriti. However, the Chairman of the Field Staff, as Adviser to the local Dean, should always be an American of experience and judgment. The ideal American is one who is versed and enthusiastic in his field, experienced in teaching, and who respects people, their customs and religion and is not satisfied with the status quo, but who is also not too eager a formist. The best measure of his effectiveness lies in his ability to train future doctors and potential successors from among his students.

The initial request of the Indonesian for about 60 American faculty members was pared down to ten of the highest priority, which was more realistic and with less tendency for Americans to separate clanishly from their Indonesian colleagues. When priority number one could not be filled, a candidate from the

second group was substituted, and no Americans were sent until the government of Indonesia had provided adequate housing for them.

Of great importance was the decision of Indonesia to make English its second tongue. This was aided by a Ford Foundation subsidy to train teachers in English for the secondary schools. For our program, it meant that we could use American texts and teach in English. In some areas where English is not widely known it has been found that American texts are inept, if not relatively useless, and teaching through interpreters is a tedious obstacle. Early in our program a few of the younger men learned Bahasa Indonesia through their own efforts, and the rapport established through this—both socially and in the classroom—was immediately manifest. Now, contract support is providing lessons in the native language for our new appointees.

Those who shared our initial inexperience were our government's Point IV program, the Mutual Security Administration, Technical Cooperation Administration, and International Cooperation Administration, who successively sought to define their relations with our contract educational program. This was not always consistent or logical—for example, when it was thought that an educational program could be part of a quick, limited impact program or that no contract money could be spent for research, even though universities consider the best teaching is that which is associated with the spirit of inquiry and investigation. We were most fortunate in the encouragement given to us by research donations from China Medical Board, Pfeiffer Research Foundation, Asia Foundation, and Caltex, so that we were able to encourage limited research and thus preserve not only the tradition of academic endeavor but transmit the spirit of inquiry to our Indonesian colleagues. The money which was so donated was administered by a research committee of the faculty—local rupiah donations in Djakarta and dollar funds from University of California were available for all foreign purchases and instruments. Besides the donation for research, the China Medical Board contributed the Chairman's salary, a comprehensive library subsidy, as well as funds for the building and equipment of a library and biological science building. Above all, the encouragement and advice from this private group in the field of Medical Education in the Far East has meant the liberalizing of the program from some of the inherent rigidity of governmental regulations.

In San Francisco, we maintain the Coordinator's office through which American personnel—academic and non-academic—are processed under the University of California personnel rules and regulations. While adjustments are made for such things as hours of work in the tropics, Indonesian holiday schedules, etc., the salary scale and status prerequisites follow the University of California appointment pattern. Teaching aids, textbooks, and laboratory equipment are approved by the Chairman of our Field Staff, the Dean of the Medical School at Djakarta, and the State-side office, and purchased through the University of California Purchasing Department. We are also concerned here with the Indonesian students who are selected jointly by our Field Staff and the Indonesian faculty for advanced study in the United States. These trainees, also subsidized by International Cooperation Administration, return as teachers.

It was obvious very early in our experience that our best contribution would be to increase the number of Indonesian physicians by expanding and improving

the program, facilities, and personnel for the *teaching* of medicine. It is our conviction that the health problem of underdeveloped populations is too vast to service only the immediate needs through sporadic visits of health professionals. Our best investment for the future is in the education and training of their own practitioners, so that the role of the trainees as the future teachers and leaders is very much our concern, and we must place them in the most favorable media. This is not always at the University of California itself—often it will be with a former member of the field staff, one who might be from the Columbia University or the University of Utah. The trainees are met on their arrival in San Francisco and when seeing them again in Indonesia a more than casual acquaintanceship is established. Some are timid and fearful but blossom under favorable handling, and intellectually they need no alibis.

Early in our experience we found the idealism of the newly independent nation was offering education to all who desired—not only in the primary schools but in such advanced curriculum as medicine also. We found the School of Medicine at Djakarta taking in 700 students per class, giving them lectures, and permitting them to interrupt their courses as their economic situation required. As might be expected, so many failed or did not continue that, of the 700 who started, no more than twenty were graduated. Such an academic mortality is a costly waste. We felt that the students should learn by doing and not only by recording a lecture or reading a textbook. We encouraged the screening of admissions, the provision of laboratory, ward space, and equipment for student experience under supervision, and the requirement of student examinations by calendar and progression through the curriculum without interruption. The Government of Indonesia generously enabled us to enlarge the laboratories and clinics so that the students themselves performed experiments and examined patients under supervision. Last year at this time I attended the commencement and convocation of the first class of 150 on this revised curriculum.

While we as a University were inexperienced and unprepared for this overseas role, so were the agencies of the United States and Indonesia, as well as our affiliate—the University of Indonesia. All of us have learned through this experience. In the field of medical education, we have now made a beginning in Indonesia, with a strong Department of Preventive Medicine and Public Health. This may ultimately prove to be the nucleus for the development of an independent School of Public Health. At the school at Djakarta, well trained doctors are being given Public Health orientation. The Indonesian Government exacts 2 years of service in military or health services for the subsidy, especially from those who have had advanced study in the United States. Their government has granted the University 30 per cent of its graduates for the teaching of medicine, so that we can now expect to be able to staff the schools of medicine which are on paper: Makassar, Djogjakarta, Medan—though we will still await the more adequate infiltration of remote villages and kampungs with Western medicine. Chinese medicine and folklore and considerable superstition still play a part, but I believe there will be better acceptance of modern medicine when the health services are replaced by Indonesians.

A very significant factor contributing to the success of our project has been the personalization of relationships. The International Cooperation Administration is constantly reminded that the University of California is not engaged in

this as an employment agent for foreign service; rather, we are conducting an educational program in medicine with our colleagues. There are many road-blocks and frustrations, but the friendships established between the faculties, their wives, the students, and their American hosts have provided a hard core of understanding. In the educated potential leaders of tomorrow we have a group of strong friends and admirers.

From a series of letters which I some day hope to publish in a brief entitled "The Twain Shall Meet," I will cite two examples:

"Today we will celebrate our Lebaran (fiesta after month of Ramadan fasting) which makes us think of all our dear friends and relatives, and that is why I am writing to you this evening. We have had guests and we have been visiting the older people these two days and we have been doing everything ourselves as the servants have their two days off."

Or, as the University of Djakarta program ended, to Mrs. Smyth from the wife of an Indonesian professor:

"The California family is spread over all parts of the world." (She refers to the American staff whose staggered departure from Djakarta and return to the States both via Pacific and via Atlantic.) "It breaks my heart into pieces to see them go. We have known each other for a long time and I cannot say how much we appreciate the friendship. I won't exaggerate if I tell you we shall miss them. I have one hope that Dr. Smyth will send them back to Surabaya so we may see them once in while."

I should like to plead for long-term support of such affiliations, since educational programs require careful planning and develop slowly. Though we do not wish to create dependency or to wear out our welcome, some thread of continued support and relation should be maintained. It was anticipated that the University of Indonesia could carry on without our aid, but the political, social, and economic turbulence of this newly independent country was not anticipated. We have an investment in a high standard of education and in friendship and understanding. Continued support for a visiting professorship in Djakarta and for future faculty and investigators is urgently indicated.

A quotation from a study by the Center for International Affairs at Harvard University (U.S. Foreign Policy, *Ideology and Foreign Affairs*, U.S. Govt. Printing Office Publication #10, Jan. 17, 1960, p. 4), seems appropriate in closing:

"Whether the outcome is chaos and communist expansion or viable societies with democratic values will depend on many factors. One fact stands out. The creation of conditions for the mellowing of communism and for constructive progress in less developed countries will require long-term, consistent, dedicated effort by the democratic states. Neither the mature democracies nor the newer nations are likely to persist in the essential effort and sacrifice unless these can be seen within a framework of shared purpose and common destiny."

## Communications

### PHYSIOLOGY VERSUS FUNCTION

EDWARD M. NELSON, PH.D.\*

Medical students (and some M.D.'s) have been heard to complain that the Human Gross Anatomy course teaches too much physiology! This is very likely a didactic carryover from the former period when the study of anatomy was strictly one of description and nomenclature. At that time function was studied as a portion of the physiology course which even included such items as physical exercise, hygiene, etc.

Present-day teaching of medical basic science subjects has become much more dynamic and treats the human as a living organism rather than a passive laboratory specimen. This represents a new approach to the concepts of anatomy and physiology and, in addition, makes it possible for Schools of Medicine to incorporate the great strides in medical science knowledge which have been and are in the process of being made.

Present-day attitudes towards "anatomy" and "physiology" should no longer be "structure" and "function" but rather "levels of integration" of a total organism! *Anatomy* as a basic science discipline now teaches the structure and function of organs, organ systems, and organisms on a gross structure level. *Physiology* teaches structure and function on a cellular and tissue level, whereas the new science of *Biochemistry* carries structure and function to the molecular level. This arrangement gives the medical student the most realistic approach to the human body and allows the basic medical sciences to have a point-of-view of "practical sciences."

As a consequence, in view of the above, it is not strange to consider microanatomy (histology and neuroanatomy) to be courses taught in a separate Department of Microanatomy or in the Physiology Department (a situation that has existed in fact in a number of European schools.) This leaves gross anatomy and embryology as courses to be taught in the Anatomy Department. In a School of Medicine this makes sense, since closer coordination can thus be effected between the Departments of Surgery, Orthopedics, etc., and the Anatomy Department, while the internist will coordinate more closely with the Physiology and Biochemistry Departments.

#### THE BULBUS OCULI (EYEBALL) AS AN EXAMPLE

##### I. Gross Anatomy:

###### a. Structure:

1. Bulbus oculi
2. Extra-ocular structures and contents of the orbit

###### b. Function:

1. optics (focusing of the light rays)
2. pupillary reflex
3. accommodation reflex
4. binocular adjustments

\*Associate Professor of Anatomy, University of Puerto Rico.

## II-A. Physiology:

1. Vision:
  - a. Structure:  
microscopic structure of the retina
  - b. Function:  
cone & rod vision—visual fields
2. Maintenance of the bulbus oculi:
  - a. Structure:  
canal of schlemm, etc.
  - b. Function:  
circulation of fluids and tissue repairs  
cone and rod vision—visual fields

## II-B. Neurophysiology:

- a. Structure:
  1. visual pathways
  2. reflex pathways
- b. Function:  
Visual centers and central coordination of vision

## III. Biochemistry:

- a. Structure:  
chemical entities involved (visual purple, vitamin 'A, etc.)
- b. Function:  
conversion of light energy into nervous stimulus (via the cis-twisted vitamin A)

## COMMUNICATION FROM THE EXECUTIVE DIRECTOR

Association of American Medical Colleges  
Proposals for the Support of Medical Education by the Federal Government  
Adopted by the Institutional Membership  
January 11, 1961  
Chicago, Illinois

## PREAMBLE

The American people are deeply concerned about health. Responding to this concern as a matter of national policy, the Federal Government in the past fifteen years, largely through the Department of Health, Education and Welfare, has joined state and local governments, health and educational institutions, voluntary health agencies, private philanthropy, and industry in meeting two especially critical needs in the attack on disease: the construction of hospital and other facilities for the care of patients (Hill-Burton program), and the support of medical research (National Institutes of Health).

Expenditures by the Government in support of these two programs represent investments in the health of the nation which pay rich dividends, as has been



amply documented. It is imperative that these programs be continued and developed further.

Health service facilities and medical research have made possible dramatic progress in the prevention and treatment of disease. A block to the effective use of new knowledge and to the pursuit of further knowledge is the increasing shortage of personnel in the health professions, particularly doctors. This block can be removed only by the improvement and expansion of the nation's system of medical education.

The critical nature of this problem has been defined in five reports prepared in recent years by advisory groups of non-government consultants.<sup>1</sup> These authoritative studies show that by 1975 the nation will need to train about fifty per cent more physicians than in 1960 just to maintain the current ratio of physicians to population, a ratio generally accepted as a minimum requirement.

Because of the time required to improve and develop facilities and faculties and to take doctors through the full cycle of five to nine years of professional training, action to improve and expand programs of medical education must be taken at once. Otherwise, the nation faces a very serious reduction in its ability to control and cure disease and our people will not have available the medical service they want and expect.

Since the problem of medical manpower can be solved only by prompt and comprehensive national effort, it is appropriate that medical schools and their parent institutions outline the basic requirements which to them seem necessary to accomplish this national objective while preserving the traditional freedom of the educational institutions. To this end, the Association of American Medical Colleges is suggesting principles of a Federal program of assistance to medical education which have been generally agreed to by its members.

The program presented in this statement outlines those measures that the medical schools believe necessary if existing programs of medical education are to be maintained at an adequate level of quality and if there is to be a sufficient expansion of our facilities to provide the number of well trained medical graduates that the nation requires.

In considering needs of medical education, it is important to understand the variety, complexity and interrelationships of activities involved in the training of medical personnel. This is especially true in relation to the three components of medical education: teaching, research, and service. The inseparable nature of these three functions has led to the "medical center" concept as a more realistic characterization of medical education than the too frequently held concept of the medical school, the teaching hospital, the research program, and community health services as activities independent of each other. However, the two major Federal support programs—for medical facilities and for medical research—while understandably directed toward specific restricted objectives have complicated

<sup>1</sup> 1952 Report of the President's Commission on the Health Needs of the Nation.

1958 Final Report of the Secretary's Consultants on Medical Research and Education.

1959 Report of the Surgeon General's Consultant Group on Medical Education.

1960 Report of the Committee of Consultants on Medical Research to the Subcommittee on Departments of Labor, Health, Education and Welfare, of the Committee on Appropriations, United States Senate, Eighty-Sixth Congress, Second Session.

1960 The Report of the President's Commission on National Goals.

the conduct of medical education by failing to recognize that research and service are integral functions with teaching. Thus, the need for service facilities and the need for research facilities in a medical education environment have been considered independently by the government, and no provision at all has been made for teaching facilities, although teaching is basic to both service and research.

The medical center typically has as its nucleus a medical school for the undergraduate training of candidates for the M.D. degree. Essential to this program is a strong faculty in the basic health sciences. Such scientists can be retained and can be fully effective only when they are given broad opportunity for research activity—teaching is barren in the absence of an environment conducive to the vigorous pursuit of new knowledge. These same faculty members are also called upon to train another important group of students—the future specialists in their fields who are Ph.D. candidates within the graduate program of the parent university. This is a vital function, particularly for the production of medical teachers and research personnel. Likewise, these faculty members in many situations are called upon to teach basic sciences to dental students, nursing students, and paramedical personnel. They must also participate in clinical teaching conferences in support of both undergraduate and graduate medical education.

The medical center concept is particularly pertinent in the teaching of the clinical specialties. Clinical teaching is conducted in relation to patient care, and a high standard of patient care is necessary for good teaching. A core of full-time teachers is required to give continuity and responsible direction and supervision to patient care and the related teaching. The teaching hospital of a medical school, then, whether directly operated by the school or affiliated with it, is an important component of the medical center. Also, opportunity for research is important to the clinical teacher and to good clinical teaching just as is true in the basic sciences.

The clinical faculty, in addition to its responsibility for teaching of M.D. candidates, is becoming increasingly responsible for graduate training of doctors—interns, residents, and fellows. Medical graduates are tending more and more to seek advanced clinical training in hospitals operated in conjunction with medical schools because of the educational orientation of the training. These teaching and training responsibilities put a heavy burden on the schools and their teaching hospitals for which support is required.

Finally, a new and growing responsibility of medical schools is to provide leadership in coordinating medical services within their area and in providing post-graduate and specialized training opportunities for practicing physicians.

These various activities of the medical school beyond the four-year M.D. program must be understood and recognized—and support of medical education must be provided in keeping with the concept of the medical center.

The proposals that follow represent the initial steps that the Association of American Medical Colleges believe should be undertaken in order to accelerate the ability of this nation's system of medical education to produce the numbers, categories, and quality of the professional and technical personnel required to meet the health needs of a population that is not only growing in size but also in medical understanding.

These proposals cover only the needs of the nation's existing schools of medicine and the need for new schools. The Association of American Medical Colleges recognizes the importance of the health professional areas other than medicine and also of the research and research training that is done in institutions other than schools of medicine. Any provision which the Federal government makes to meet the needs of educational and research activities that take place outside the medical school and its research and service facilities should be over and above the recommendations in this statement.

While all of the proposals require implementation, *funds for construction* are given first priority because it is the inadequacy of existing facilities that is the primary obstacle to the over-all development that is needed. Until steps are taken to solve this problem, little will be accomplished by efforts to increase medical school faculties or student enrollments. Students and teachers must have suitable places in which to work, including classrooms, laboratories, libraries, hospitals and clinics.

I. Matching funds for modernization and expansion of existing schools  
and the construction of new schools

A. *The need.*—In the fall of 1959 the Surgeon General's Consultant Group on Medical Education reported that to maintain this nation's present ratio of physicians to population, by 1975, 3,500 more physicians must be graduating each year than is presently the case. This means, with due allowance for drop-outs between admission and graduation, that by 1970 this nation must provide an increase of approximately 4,000 first year places in its schools of medicine.

A survey in the fall of 1960\* discloses that 1,700 of these additional first year places can be created by the full modernization and expansion of existing schools. The remaining 2,300 must come from the establishment of new schools. Therefore, the provision of funds that will provide for both of these approaches will permit enrollment increases that can be both prompt and continuous. The nation's schools of medicine, colleges and universities of themselves do not have the resources to finance the necessary modernization expansion and new development. Most of the needed money must come from the Federal government.

B. *Policy.*—Since medical education serves many national purposes and since its strength comes through the diversity of local ownership and control, the Association of American Medical Colleges favors both federal and local participation in the construction of medical schools and their related research, library, hospital and clinic facilities.

Federal matching funds should be provided under conditions that will:

1. be sufficient in amount to encourage action that is both prompt and adequate;
2. encourage the modernization and expansion of existing schools;
3. encourage academic institutions not presently involved in medical education to plan and develop new schools;
4. encourage an institution's continuing effectiveness in maintaining diversity in its sources of financial support;
5. recognize the essential unity of medical education and research by identifying the support of one with the other;

\*Wiggins, W. S., Leymaster, G. R., Taylor, A. H., and Tipner, A., Medical Education in the United States and Canada, J.A.M.A., 174: 1425-1431.

6. recognize the indispensability of the library, the university hospital, and clinic to medical research and education.

C. Proposals.—

1. As an initial step, the Association of American Medical Colleges recommends that the Congress pass enabling legislation covering a ten year span that will provide matching funds for the full modernization and expansion of existing programs in medical education and the development of new programs.
2. It is recommended that the first appropriation measure cover a three year period with a provision for annual amendment, depending upon the continuing study of needs and of the amounts that can be expended to the best possible advantage. As a basic appropriation for this three year period, the Association recommends:
  - a. that \$50 million a year be appropriated for grants for the full modernization, expansion or replacement of the educational, research, and library facilities of existing schools of medicine. If an increase of 5 per cent or more is made for the enrollment of first year medical students, the federal matching should be three dollars for one; if there is less than a 5 per cent increase in first year places, the federal matching should be three dollars for two;
  - b. that \$50 million a year be appropriated for grants to existing schools of medicine for the establishment, modernization and expansion of those teaching hospitals and clinics that are their primary base for clinical teaching and research, the granting of such funds to be upon application made by the medical school or university. The matching formula for such grants should be one Federal for one local dollar;
  - c. that for the first year, \$50 million be appropriated for grants for the construction of new schools, including research facilities and teaching hospitals and clinics. Federal funds should be provided upon a 3 to one basis;
  - d. that \$300,000 per year be appropriated for grants, up to \$50,000 to an academic institution that wishes to study the feasibility of establishing a new school.

## II. Financial aid to students of medicine

In spite of a rapid increase in the number of liberal arts graduates, there continues to be a decline in the number of medical school applicants. While this may be due to a variety of reasons, there can be no doubt that one important reason is the amount of personal expense and time involved in study for the M.D. degree and in the additional years the young physician must spend in internship and residency training as contrasted with the time and cost involved in securing the Ph.D. in the various sciences.

A nation wide study of the students graduating from medical schools in 1959 showed that at least one-third had important financial problems.

The Association of American Medical Colleges believes that to insure an adequate number of medical students, the most crucial need at this time is for non-refundable educational grants (pre-doctoral medical fellowships). The Association recommends that these grants be provided in amounts and under con-

ditions that will attract and hold qualified students who for financial reasons might not otherwise be able to pursue a career in medicine. The Association recommends that these non-refundable fellowships should:

1. be available for students during all four years of medical school;
2. not in any way limit the ability of a student to attend the school of his choice;
3. not impose restrictions upon the student's freedom to obtain postgraduate training or pursue a career of his choice;
4. be made available as a lump sum grant to each school, the amount to be determined by the number of enrolled medical students. Five hundred dollars per student is suggested;
5. be administered by each school in accordance with its particular needs and circumstances with the provision that all such funds be used in direct aid to medical students, that up to \$2,500 per student be the maximum of the Federal fellowship allowed in a single school year, and that no restrictions be placed upon the freedom of the school to use funds for student aid from other sources.

### III. The provision of the full cost of project-supported research and research training

The Association continues to recommend that grants from the National Institutes of Health for the support of research and research training permit the payment of full costs based upon a formula that will allow for variations in the costs from institution to institution.

### IV. The support of research and research training

The Association of American Medical Colleges recognizes that the Federal Support of research and research training has led to great improvement in the health of both the nation and of the world and recommends that this support be continued. One of the major objectives of the Association's proposals for funds for the remodeling and expansion of existing schools and for the construction of new schools, as well as its recommendations for full reimbursement for the cost of research and research training, is to strengthen the basic capacity of the nation's schools of medicine to conduct these activities.

The Association therefore recommends that, as the result of constant study, each year's appropriation for research and research training continue to be adjusted to the national need, to the availability of facilities and scientific personnel, and to the amounts of money that can be spent wisely and efficiently.

### V. General support of medical education

The program of assistance to medical education offered in the foregoing sections is essential to modernize and expand the physical facilities of the medical schools of the nation, to assist in the creation of new schools, and to make it possible for young men and women of intelligence and character, even though of modest means, to secure a medical education.

But this program alone will not provide enough physicians to meet the needs of the nation. A strong system of medical education requires adequate financial support that is continuing and stable. Universities with budgets already under great stress will be unable to maintain, improve, or expand their existing medical

programs or to establish new medical schools or new educational programs unless sources of additional operating funds are found.

Since this is a matter of vital concern to the entire nation, the Association of American Medical Colleges believes it is reasonable and proper that the Federal government should provide together with other national and local sources the needed additional operating funds. All such funds should be made available in a manner which will assure the continuation of full institutional control of medical education.

#### VI. Administration

The Association of American Medical Colleges believes that the close coordination of Federal programs that support medical education is essential.

The Association takes cognizance of the long and effective working relationships existing between the medical colleges and the Department of Health, Education and Welfare, particularly the U.S. Public Health Service and its National Institutes of Health and expresses its hope that the future Federal support of medical education will be administered in the same enlightened manner, with the full utilization of non-federal consultants, that has characterized the past.



## Communications from N. I. H.

### SUBMISSION OF RESEARCH GRANT APPLICATIONS TO THE PUBLIC HEALTH SERVICE

ERNEST M. ALLEN, PH.D.\*

The extraordinary growth of the U.S. Public Health Service program of aid to medical research during the past 15 years has led to an increasing flow of inquiries from the academic world about the appropriate channels for submission of applications for grants.

The problem appears somewhat complicated, since research project grants—not to mention the numerous other types of support—may come from any one of a dozen or more divisions of the Public Health Service, including those comprising the National Institutes of Health.

One of the N.I.H. units, the Division of Research Grants, provides a central mechanism for review and appropriate assignment of applications, and it is to this Division, at Bethesda, Maryland, that all formal proposals should be sent.

Applications for research grants are processed at N.I.H. in the following manner: they are received, on forms provided by the Division of Research Grants, and are first identified with a particular research area. They are then referred to a study section or advisory committee of approximately fifteen nonfederal scientists, who are expert in that research area. These scientists evaluate the proposal for scientific merit, competence on the part of the investigator, and adequacy of facilities to support the work. Their evaluations and recommendations then go to one of nine national advisory councils, made up of leading lay citizens, educators, and nonfederal scientists, who review research grant applications for their concurrence with broad PHS policies and programs. Upon recommendation by a council, the Surgeon General of the PHS may make the final decision, though this authority is usually delegated to N.I.H. institute directors or other responsible officials.

Persons desiring preliminary discussions about research grant applications, and whose interests fall within a discreet institute or subject area, may wish to write to the grants branch chiefs of the appropriate units at the N.I.H. in Bethesda or to those within the Bureau of State Services, U.S. Public Health Service, Washington 25, D. C.:

#### National Institutes of Health

National Institute of Arthritis & Metabolic Diseases—Dr. Ralph E. Knutti  
National Institute of Neurological Diseases & Blindness—Dr. Edwin L. Hove  
National Cancer Institute—Dr. Ralph G. Meader  
National Institute of Dental Research—Dr. F. Earle Lyman  
National Institute of Allergy & Infectious Diseases—Dr. Leonard Karel  
Division of General Medical Sciences—Dr. Carl R. Brewer  
National Heart Institute—Dr. J. Franklin Yeager  
National Institute of Mental Health—Mr. Philip Sapir

\*Associate Director for Research Grants, National Institutes of Health.

Bureau of State Services

Division of Water Supply and Pollution Control—Mr. Harry Faber

Division of General Health Services—Dr. William F. Mayes

Accident Prevention Program, Division of Special Health Services—Dr. Leon Goldstein

Division of Air Pollution—Dr. Maurice Bender

Division of Milk, Food, Interstate and Community Sanitation—Mr. Harold Robinson

Division of Occupational Health—Dr. W. Clark Cooper

Division of Radiological Health—Dr. Paul F. Hahn

Division of Nursing—Miss Ellwynne Vreeland

Division of Hospital and Medical Facilities—Mr. Gotthelf Fiedler

In all other cases, correspondence should be addressed directly to the Division of Research Grants.

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## Erratum

On page 1054 of the November issue of *The Journal of Medical Education* the author's name which is incorrectly spelled as "Worthington" should be corrected to read "Worthingham."

# ABSTRACTS FROM THE WORLD OF MEDICAL EDUCATION

ANGELA SANCHEZ-BARBUDO, Ph.D.  
Abstracts Editor

**Engineering and Medicine.** J. A. L. MATHESON. The Medical Journal of Australia, Vol. II, No. 8, pp. 281-284 (Aug. 20), 1960.

Dr. Matheson, Vice-Chancellor of Monash University, Melbourne, stresses in his address (to the Royal Australasian College of Physicians) the many similarities between the two professions. Although there is a fundamental difference, since engineers are mainly dealing with inorganic problems, both have their origin in the struggle for survival which has always been the dominant force in man's life. Doctor and engineer share the hard task of solving the problems that nature presents often in advance of a full understanding of all the natural laws that may be involved. The connected processes of diagnosis and treatment, furthermore, are seen as analogous to the processes of design and construction. Imagination, investigation, collection of information, exercise of judgment, technical knowledge and skill, and the ability to work against time are required of doctor and engineer alike. Sometimes the two professions come very close together, as, for instance, recently, in Ghana where the possible effect of a hydroelectric system on the incidence of water-borne disease had to be studied. An increasing number of contacts between medicine and engineering are now developing in the fields of industrial, social, and preventive medicine. In recent years the study of man and machine

in combination has been brought to public attention in a spectacular way through the discussions of space travel. The experiments carried out to study the problem of survival of a man put into orbit in a satellite are the latest developments in the now well established field of aviation medicine. The nuclear weapons, on the other hand, have focused attention on the need to protect mankind from radiation hazards, and in this field, too, information originated from military necessity found application in civilian life. Further progress in the protection of human life through combined medical and engineering efforts is seen in the research on motor vehicle accidents. Consideration of the body and machines in combination has been leading to consideration of the body as a machine, or as a structure. Interest in the mechanics of body movement (originated in the 15th century with Leonardo da Vinci's studies) has been growing in recent years. In 1959, the Institution of Mechanical Engineers in London arranged a symposium on what is now becoming known as *biomechanics*. There, the contributions from doctors and engineers demonstrated very clearly how much there is still to learn about even fundamental matters, such as the strength of bones or the lubrication of joints. The reasons why *biomechanics* has not yet made any significant contribution to medical knowledge are examined by the author. He recommends that physicians

get acquainted at least with the introductory work done in that field, such as D'Arcy Thompson's classic "On Growth and Form," or Sir James Gray's (Cambridge) life-long studies on how animals move.

**Der Arzneimittelmisbrauch des "Modernen Menschen"** (The Drug Abuse of "Modern Man"). E. BAY, M.D. Deutsche Medizinische Wochenschrift, Vol. 85, No. 38, pp. 1676-1680 (Sept. 16), 1960.

If this problem is to be understood correctly, one must always be aware of the fact that pharmacology and toxicology are inseparable. Whenever a substance produces any effect on an organism, only dosification can determine from what time it starts to become toxic. Even the "best" and, under certain circumstances, most useful medicament can be misused and become harmful under different conditions. Dr. Bay (Director, Neurologische Klinik of the Academy of Medicine, Düsseldorf), eliminating from his discussion the problem of narcotic drug addiction and alcoholism, surveys the harmful developments in the use of "tranquilizers" (not yet as much in fashion in Germany as they are in the U.S.A.); "painkillers," and barbiturates. As to the reasons behind the abuse of medical drugs today (clearly not due to any addictive urge as in the case of narcotics and alcohol), two aspects of the "modern man" are stressed: the increase of "affective" burden he has to carry due to the steadily growing aspirations for a higher standard of living, combined with the intensification of "leisure" time activities. By constantly being occupied to the limit of his capacities, modern man cannot tolerate any impairment of his physical fitness and even a slight headache calls for immediate medication. The other, even more

significant, factor is seen in modern man's attitude toward illness. Physical ailments are no longer considered as a turn of fate (or of "providence") to which one must resign himself but as a disturbance of the "perfect order" for which our so highly developed science and technique—in this case the pharmaceutical industry—must provide an immediate remedy at any cost. The intensive advertising campaigns by drug companies we witness today considerably encourage this tendency. It is the task and responsibility of the modern medical practitioner to acquire a thorough knowledge of the benefits as well as the damages that the drugs he prescribes may produce, and to balance them against one another in every single case. According to recent statistics, about 75 per cent of all drugs consumed in Germany were sold on medical prescription, which, the author points out, also indicates a "prescription addiction" of doctors. The practitioner's share in today's drug abuse must be blamed on negligence, and the present situation should be a cause of serious concern to the medical profession because it ultimately may lead to a therapeutic self-determination by the patient who will need a doctor only to write the desired drug prescription.

**Future Role of the Family Doctor.** E. MAURICE BACKETT, M.D. *The Lancet*, Vol. II, No. 7159, pp. 1075-1076 (Nov. 12), 1960.

The changes in the pattern of disease in Western Societies (from infectious to chronic degenerative diseases, increase of injuries through accidents, effects of radiation, etc.) have given rise to new social problems. The changing role of the general practitioner is viewed by Dr. Backett (Prof. of Social Medicine at the University of Aberdeen) as among the most intriguing of those problems.

The new approach to medical care is preventive in attitude (although, it is pointed out, the borderline between prevention and very early treatment is rapidly becoming meaningless). It is preventive in the sense of using our growing epidemiological knowledge accurately to define vulnerable groups and individuals in our population and manipulating their personal and social environment to prevent disease. Yet between the present and the future practice of preventive medicine important differences can be envisaged. So far health and food controls have been "impersonal." However, if the future general practitioner is to attempt the control of chronic disease, he must "meddle" in an increasingly personal way, because before long our so-called "new diseases," most of which arise from our changing ways of life, may present as much of a threat as the epidemics of the 19th century. The new threats to health, furthermore, seem less likely to respond to curative medicine than the diseases of the past, and thus prevention acquires a new urgency. The

wise family doctor is being forced increasingly to shift his attention from sick people to the habits and behavior of the healthy ones. His dilemma is this: while the highly scientific supervision of healthy people, as a large part of his job, is now becoming technically possible for the family doctor, he has to face the resistance of his patients who, when feeling ill, readily seek medical care but are unlikely to be impressed by the prospect of disease in 20 year's time. Emphasis on prevention has also created another problem: the threat of neurotic mass fear. However, the studies of community health in Great Britain and, especially, at Framingham, in the U.S.A., indicate that this danger could be avoided. Finally, the new approach to medical care needs a rather different sort of doctor to apply it. Such a man would have different interests and would need much more time than today's general practitioner whose medical training has emphasized curative medicine above everything.

## NEW BOOKS

KENNETH E. PENROD

Book Review Editor

### Abstracts

**Cardiovascular Dynamics.** By ROBERT F. RUSHMER. 2d ed. Philadelphia: W. B. Saunders Company, 1961. 481 pp. \$12.50.

This volume is an extensive revision, enlargement, and reorganization of a book originally published under the title "Cardiac Diagnosis: A Physiologic Approach." The components of the cardiovascular system are presented in terms of their structure, function, and control under normal conditions, followed by consideration of the changes induced by the common disease states. The text was designed for students in the broadest sense—from first-year medical students to experienced cardiologists. It is specifically intended for use as a supplemental text for courses in physiology, physical diagnosis, and clinical cardiology. The most important forms of cardiovascular disease are included among the examples employed to elucidate the nature of the abnormal cardiovascular function. However, the text is not intended as a handbook for the practice of cardiology, since it was not considered appropriate to detail all forms of cardiovascular disease. The illustrations are distinctive in respect to both their nature and their utilization. Important ideas in each chapter have been illustrated in order to facilitate discussion and aid visualization of the concepts. The figures are intended to explain ideas rather than offer evidence for arguments. Realism in the schematic drawings has been retained as much as possible to provide visual images of physiologic and pathologic mechanisms *in situ* rather than abstractions. Graphs and tables have been largely avoided. Priority has been given to recent references because they provide a convenient point of departure for further reading. Although the presentation may appear excessively biased to some readers, the author has avoided the presentation of ex-

haustive conflicting viewpoints in an effort to explain a point of view.

**Pharmacology. The Nature, Action and Use of Drugs.** By HARRY BECKMAN. 2d ed. Philadelphia: W. B. Saunders Company, 1961. 748 pp. \$15.50.

This is a textbook for the undergraduate medical student. It is designed to supplement his studies in the laboratory and lecture and conference rooms. It is written in three distinct portions. In Section I the attempt is made briefly to orient pharmacology among the other preclinical disciplines. In Section II there is presented a description of the broad background of the science and an exposition of the bases from which these advances are made. Section III, comprises the major part of the text, offers combined discussions of the actions and actual uses of drugs in an arrangement designed for direct serviceability from the pharmacotherapeutic standpoint. The bibliographies are not exhaustive but only meant to serve as guides for excursions into the literature. Extensive revision has taken place in this edition to bring the book more nearly up-to-date and to fulfill the purpose for which it is written.

**Handbook of Physiology.** By R. J. S. McDOWALL. 43d ed. Philadelphia: J. P. Lippincott Company, 1961. 726 pp. \$12.50.

This distinguished standard work, the history of which began with a first edition in 1848, approaches the subject of physiology through consideration of anatomy, biochemistry, biophysics, physical chemistry, and biology. This book has a long and interesting history during which time it has been under the direction of many famous physiologists. It was originally written by Dr. Kirkes. From 1896 to 1930 the book was known as "Halliburton's Physiology." Since



1930 Professor McDowall has had sole responsibility for the volume, which in its present form is almost entirely his work. For the 43d edition a very considerable number of revisions have been made. Some sections, notably those on the secretion of gastric juice, the output of the heart, the kidney, the pituitary, muscle contraction, and the oxygen lack in asphyxia, are almost entirely rewritten. The book is primarily designed for medical students preparing for examinations, not only in Great Britain and Ireland but also for the National Board of the United States.

**An Introduction to the Mathematics of Medicine and Biology.** By J. G. DEFARES and I. N. SNEDDON. Chicago: The Year Book Publishers, Inc., 1960. 655 pp. \$14.00.

This book is written to help research workers in the biological and medical sciences to acquire the mathematical techniques which are being used increasingly in their own fields. The two authors approach the problem from different directions. One is a physiologist who has discovered the need to know these techniques himself and the other is an applied mathematician who has had to teach mathematics to students of biology. The basic mathematical tools are developed but always against a biological background. About a third of the book deals with the applications of mathematics to problems in medicine and biology. Emphasis has been placed on how to formulate a given biological problem in mathematical terms, that is, how to set up the basic mathematical equations governing the model which describes the biological situation. In view of the many excellent books on statistics and statistical methods, this subject has not been included. However, the basic tools necessary for the study of the elementary theory of mathematical statistics has been included.

**Clinical Neurology.** By SIR RUSSELL BRAIN. New York: Oxford University Press, 1960. 387 pp. \$8.75.

This book is not a smaller version of the author's "Diseases of the Nervous System." It is written with a different aim and a dif-

ferent plan. In writing it the author had in mind particularly the need of those doctors and students who require to know only the essentials of neurology, but to know them thoroughly. It is based on the assumed need for the beginning student to learn to recognize those deviations from the normal which are the physical signs of disease. In the systematic sections of this book the author has given the greater part of the space to the common disorders, bearing in mind especially the needs of residents and other physicians who, faced with the problem of diagnosis or treatment, have, stage by stage, to find an answer to the question: "What do I do now?" The author has attempted to explain what they should do, and why. The new Paris nomenclature (P.N.A.) has been used in this text. A fairly full glossary of terms has been included at the end of the book.

**Haematology and Blood Groups.** Edited by D. A. G. GALTON and K. L. G. GOLDSMITH. Chicago: University of Chicago Press, 1961. 169 pp. \$4.00.

This material is reprinted from two recent issues of the *British Medical Bulletin*. The papers, now presented in book form, deal with current research in the area of haematology and blood chemistry. These studies are exceptionally succinct and are the most up-to-date possible in a rapidly moving science. The variety of specialists contributing makes this a particularly well rounded review. The book will be of immense value to biologists and should be among reference books in any blood bank.

**Current Therapy—1961.** Edited by HOWARD F. CONN, with 12 consulting editors. Philadelphia: W. B. Saunders Company, 1961. 764 pp. \$12.50.

This is the thirteenth annual edition of *Current Therapy*. The book continues to have as its aim to provide an authoritative and timely source of diverse information concerning specific and recommended therapy for many conditions. Each year, this is essentially a new book. Of the 307 articles comprising the present volume, 253 are new, and the articles carried over from the pre-

vious year have been extensively revised. The contributors have been carefully selected not only because they are actively interested in the specific diseases discussed but also because they are recognized authorities in the medical world. They have described their present methods of treatment in brief, to-the-point articles devoid of extraneous material but in enough exact detail for proper management. The articles are original and have been written expressly for this volume.

**Introduction to Medicine and Medical Terminology.** By LOUISE ESPEY BOLLO. Philadelphia: W. B. Saunders Company, 1961. 323 pp. \$5.00.

This book has been designed to give the beginner in medicine or nursing, and all persons who deal with health matters, a panoramic view of the whole range of diseases and injuries and a closer inspection through the study of the complex medical language that doctors use to name these ailments, their symptoms and causes. Unit One is devoted to a limited discussion of certain concepts of health and disease in modern times and as they have come down to us from antiquity. Units Two and Three outline the principles of medical terminology and disease classification. The word elements of Greek or Latin origin are analyzed and arranged in lists of prefixes, suffixes, and stems, so that each portion of a polysyllabic medical term becomes understandable. Unit Three contains a long list of parts of the body, arranged by regions and then by systems, with the Greek or Latin stems that are often used in their names, thus simplifying the terminology of anatomy to a considerable extent. Units Four and Five present discussions of all types of injuries and diseases with emphasis mainly on their terminology, synonyms, symptomatology, and etiology if that is

known. Additional lists of stems from the Greek or Latin are provided at the end of each chapter.

**A Student's Guide to Obstetrics and Gynecology.** By CHRISTOPHER J. DEWHURST. Philadelphia: J. B. Lippincott Company, 1960. 225 pp. \$4.00.

This book has been written for the student who has received some clinical instruction in obstetrics and gynecology and who is settling down to learn the subject for the final examination. The aim has been to select and to deal simply and clearly with those aspects of the subject which are the most important from his point of view. A special effort has been made to clarify matters which students often find particularly confusing, such as the details of obstetrical maneuvers and gynecological operations. In short, what the author has attempted here is to put down what the student should know first in this subject before attempting to burden his memory with greater detail.

**A Textbook of Chemistry.** By STELLA GOOSTRAY and J. RAE SCHWENCK. 8th ed. New York: The Macmillan Company, 1961. 483 pp. \$6.95.

This text is written primarily for nursing students. In order better to serve the student of nursing the authors have divided the subject matter into three sections: Part I, "Basic Concepts of Chemistry"; Part II, "The Chemistry of Carbon Compounds"; and Part III, "Applied Biological Chemistry." Part III has been made more functional. It is in this portion of the text that the most extensive revisions have been made. Each of the three parts is concluded with a brief word drill and with a few review questions. The "Chapter Surveys" and the "Questions and Problems" have been retained from the previous edition. In addition, a "Glossary" has been added.

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## MEDICAL EDUCATION NEWS

from the Medical Schools

### Illinois Educator Named Dean at Hahnemann

Dr. WILLIAM F. KELLOW, associate dean at the University of Illinois College of Medicine, has been named dean of Hahnemann Medical College. His appointment is effective July 1. In taking over his new duties, he will relieve Dr.



Dr. William F. Kellow

CHARLES S. CAMERON of the academic portion of the dual responsibilities which he has held for the past year since he was elected president.

Dr. Kellow received his M.D. degree from Georgetown University in 1946 and began his teaching career there in 1947 as clinical instructor in surgery, later to be named clinical instructor in medicine. He joined the Illinois faculty of medicine in 1953, serving as assistant dean since 1955, and as associate dean since 1959. As chairman of the Committee of Instruction for the College of Medicine, he has been active in curriculum study and revision in the field of medical education, and has been instrumental in development of plans for the university's proposed medical sciences building.

In his new position Dr. Kellow will serve as dean over approximately 400 medical students and a faculty of 650, and also will act as chief medical officer of the Hahnemann hospital.

#### Boston

A newly endowed chair in forensic medicine will be filled by Professor WILLIAM J. CURRAN, a pioneer in the field of law-medicine research. Curran, who has been director of the Boston University Law-Medicine Research Institute since its inception in 1959, is the first Edward R. Utley Professor of Legal Medicine. The endowment for the new chair was created by part of a \$441,000 bequest from Dr. Utley's estate. The remaining funds will be used to establish

the James Utley Professorship in Surgery, in honor of the donor's father.

#### U. of Chicago

An intensive psychiatric study of non-conformist behavior will be undertaken at the University of Chicago, and named to a new professorship to head the project is Dr. LAWRENCE Z. FREEDMAN, a fellow at the Center for Advanced Study in the Behavioral Sciences at Stanford University. "He is a former clinical professor of psychiatry at Yale's Medical

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If you have taught or practiced pharmacology during the past twenty years, you have witnessed the tremendous change in the practice of medicine—the enormous number of new drugs introduced each year, the rapid changes in therapy and finally more recently, the growing demand that the teaching of medicine be changed to better equip the medical student to make intelligent decisions or his own—particularly in the selection of drugs for his patients.

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in other courses, this new book concentrates on the actual mechanism of the disease and the reaction of the drug on the specific tissue, organ, or system of the body which is the essence of real pharmacologic knowledge for the modern practitioner of medicine.

While many other pharmacology textbooks still attempt the impossible task of giving more and more definitive medicine and treatment, amassing encyclopedic listings of available preparations of practically all drugs, this new book stresses principles and essential facts about important drugs. Great saving of reading time is effected by eliminating repetitious discussions of compounds which have little practical or theoretical importance. Principles of absorption, excretion, distribution, drug metabolism and detoxication processes, toxicity and drug hypersensitivity are discussed in detail including many current concepts not yet available in most other volumes. Aren't these good reasons why you should carefully consider using Dr. Goth's new textbook for your pharmacology course next semester?

By **ANDRES GOTH, M.D.**, Professor of Pharmacology and Chairman of the Department, The University of Texas Southwestern Medical School, Dallas, Texas. Ready this month. Approx. 584 pages, 6¾"×9¾", 49 illustrations. About \$11.00.

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School and visiting lecturer in the Law School. The post has been established with a \$250,000 grant from the Foundations' Fund for Research in Psychiatry. Dr. Freedman will arrive in Chicago this summer to take up his new post.

The highest honor of the Peruvian government has been awarded to Dr. CHARLES HUGGINS, Director of the Ben May Laboratory for Cancer Research. Presentation of the Order of the Sun, was made by President Manuel Pardo at the presidential palace in Lima recently. The citation is the Peruvian equivalent of such awards as the French Legion of Honor.

### Cincinnati

A new division of immunochemistry for research into the chemical mechanisms that establish immunity will be established at the College of Medicine with a \$65,000 grant from the Walter A. and George McDonald Foundation. The research will be aimed at finding new treatment for diseases now considered untreatable, said Dr. RICHARD W. VILTER, director of the department of medicine. The new division will be activated when the university finds a physician with advanced training in medicine and experience in the field of immunity to act as its director.

### Colorado

Dr. WILLIAM R. WADDELL, formerly of the Harvard Medical School, was appointed professor and chairman of the department of surgery. He succeeds Dr. HENRY SWAN, recently resigned. Dr. Waddell received his M.D. degree from the Harvard Medical School and has been a member of that faculty since 1952. He also was on the staffs of the Massachusetts General Hospital, Faulkner Hospital and the Massachusetts Eye and Ear Infirmary.

### Duke

Dr. WILLIAM P. WILSON has been appointed associate professor of psychiatry and head of the department's electroencephalography division. He also is chief of the neuropsychiatric research laboratory of the VA Hospital in Durham, N.C. Before coming to Duke he taught at the University of Texas Medical Branch.

Dr. JOSEPH K. ISLEY has been appointed associate professor of radiology and medical director of the radioisotope laboratory. He returned to the Duke faculty after two and a half years of private practice in Fort Myers, Fla.

### Albert Einstein

Plans for construction of a ten-story research building at the College of Medicine were disclosed recently. The building will be called the Ullmann Research Center for Health Sciences in honor of Mr. and Mrs. Siegfried Ullmann, whose \$2 million gift to the university will be used towards the project. Ground-breaking ceremonies for the new building were held recently and completion is expected to be in the fall of 1962.

The April issue of this *Journal* carried the statement that Dr. CARL LEVENSON had been appointed director of the department of Physical medicine and rehabilitation. Dr. Levenson was named to this post at Albert Einstein Medical Center in Philadelphia, Pa., and not at Albert Einstein College of Medicine. Our apologies to Dr. ARTHUR ABRAMSON, chairman of the college's department of rehabilitation medicine, for displacing him.

### Emory

The university's new Clinical Research Facility has admitted its first patients. The result of a Public Health Service grant received last year, the facility will enable doctors and scientists



to treat and observe patients under completely controlled conditions. The facility has rooms for 10 patients, its own control laboratories, and a diet kitchen. The grant which made these possible will also cover hospital costs for the patients to be accepted and salaries for the staff of the center.

The School of Medicine has received a \$75,000 grant from the Burroughs Wellcome Fund to help support a clinical pharmacology section for the next five years. Dr. LEON I. GOLDBERG will come to Emory from the National Heart Institute to establish the section.

Dr. HUGH R. DUDLEY JR., has been named chairman of the department of pathology. Taking over his duties June 1, he fills a post left vacant by the resignation of Dr. WALTER H. SHELDON, now at Johns Hopkins.

Emory has received \$250,000 from the late Mrs. Amelie McAlister Upshur to establish a chair of preventive medicine and community health in the medical school. The gift will provide for the expansion of one of the newest departments in the school.

### Harvard

An initial gift of \$250,000 to the New England Deaconess Hospital and the Harvard Medical School will go toward the construction of an underground laboratory for developing and testing radiation methods for the treatment of cancer. The gift was made by the Fannie E. Ripple Foundation, Newark, N.J., and according to the terms, construction must start before Oct. 1, 1962. The laboratory will house several types of high-energy radiation equipment for the experimental treatment of cancer, including multi-million-volt X-ray machines and linear accelerators to produce high-speed electrons.

### Jefferson

Jefferson Medical College and Medical Center are embarking on a \$40 million development program that will triple the center-city area occupied by the school. A \$10.8 million Basic Science Building and a \$2 million Student Commons Building, scheduled for completion in 1965, have top priority in the program. Urgently needed space for research facilities put the Basic Science Building at the head of the list. University officials say the building will not only make possible an expansion of approximately \$1 million a year in research in the pre-clinical departments concerned but also will permit an increase in medical college enrollment. Scheduled later are an administration building and residential facilities to house 1,006 persons. The General State Authority of the Commonwealth of Pa., and the Federal government are expected to contribute two-thirds of the \$40 million. The balance will be raised in a national campaign.

### Johns Hopkins

A new graduate curriculum combining engineering and medical sciences will begin at Johns Hopkins next September. According to the university's president Dr. MILTON EISENHOWER, the program in Biomedical Engineering "will be the first of its kind in the country" though the Universities of Pennsylvania and Rochester are cooperating with Johns Hopkins in instituting similar programs. The three universities will have an exchange relationship in this program, so that students and teachers may work at any of the three institutions.

The purpose of the new program is to train students to apply advanced engineering to biochemical research. Students enrolled will take course work both in the School of Medicine and the School of Engineering. At least four years

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case of  
the cigarette  
and the  
lab bench**



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of study and research will be required to fulfill the requirements for the degree with an additional year of post-doctoral study in biochemical research recommended.

The new course at Hopkins was conceived largely by Dr. SAMUEL A. TALBOT, associate professor of medicine, working with Professor JAMES BELL of the department of mechanics in the School of Engineering. Two Public Health Service traineeships will be awarded each year on a competitive basis to students in the program at Hopkins.

#### **Kentucky**

The department of physiology, chaired by LOREN D. CARLSON, has received approval from the University Faculty for establishment of its proposed graduate program leading to the Master of Science and Doctor of Philosophy degrees. The new proposal offers a basic program, covering one to two years, to allow instruction in basic mammalian and cellular physiology and the correlated instrumentation, including project type laboratory work.

New member of the faculty is Dr. RUDOLPH L. MUELLING JR., who has been named professor of pathology and head of the section of forensic pathology and toxicology, department of pathology. Dr. Muelling comes to Kentucky from Louisiana State University School of Medicine, where he was assistant professor of pathology.

#### **Louisville**

Dr. J. MURRAY KINSMAN, dean of the School of Medicine, has been given the additional title of director of hospital relations. According to the university's president Dr. PHILIP DAVIDSON, the new post was created because the work of the School of Medicine and other institutions in the Medical Center has grown greatly in recent years and will continue

to grow. Four hospitals are now in the center.

Announcement was also made of the creation of a new Medical School post—that of associate dean. When named, the new associate dean will be responsible to Dr. Kinsman and through Kinsman to WILLIAM J. MCGLOTHLIN, vice-president for medical affairs.

#### **Minnesota**

Applications are now open for a one year advanced training program in the theory and technology of steroid biochemistry, which will start September 1961. Recent graduates with the M.D. or Ph.D. degree will receive a stipend of \$5,500. The program is sponsored by the National Cancer Institute of NIH. Applications may be made to Dr. FRANK UNGAR of the school's department of physiological chemistry.

#### **New York Medical**

JOHN H. BEDDOW has been named assistant to the president for Hospital Administration. In his new post Beddow will be responsible for the administration of the 350-bed Flower and Fifth Avenue Hospitals which functions as the service hospital of New York Medical College. He last served as executive director of the Chronic Disease Hospital, Brooklyn, N.Y.

#### **New York University**

The university's College of Engineering has formed a Biomedical Computing Section within its research division to provide computer services for medical researchers. The division has received an initial \$48,000 grant from the NIH for support of the new unit. Joint directors of the program are Dr. LEE D. CADY JR., assistant professor of physical medicine and rehabilitation, and Dr. MAX A. WOODBURY, research professor of mathematics in the College of Engineer-

XXV



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ing. A long-range goal of the Engineering Research Division is to develop a highly automated computing center for the processing of medical data on a large scale.

#### **Northwestern**

Dr. LESLIE B. AREY, emeritus professor of anatomy, has been named an advisor to the Laboratory of Perinatal Physiology of San Juan, P.R., by Dr. JAMES A. SHANNON, director of the NIH. The San Juan Laboratory is part of the NIH. A faculty member at NU for 46 years, Dr. Arey retired in 1956 as chairman of the department of anatomy, but has continued in teaching and research.

#### **Ohio State**

The College of Medicine has announced the appointment of two new assistant deans. Dr. JOHN A. PRIOR, professor of medicine and chief of the division of pulmonary diseases at University Hospital, will become assistant dean upon the retirement of Dr. PAUL HUDSON June 30. Dr. JAMES H. WILLIAMS, clinical assistant professor of obstetrics and gynecology will take over the position as assistant dean now held by Dr. CHAUNCEY D. LEAKE. Dr. Leake, currently president of the American Association for the Advancement of Science, will lay aside his administrative duties but will continue as professor and chief of the division of pharmacology.

Both of the assistant deans are graduates of the College of Medicine. Dr. Prior, who also will be secretary of the college, will supervise postgraduate medical education. Dr. Williams, on the faculty since 1952, was instrumental in the formation of the university's Institute of Perinatal Studies, which he serves as executive assistant director. He will supervise medical student relations among the college's 600 medical students in his new post.

Dr. Hudson is retiring after serving

26 years on Ohio's faculty of medicine. He is editor of the recently published Vol. II of the History of the Ohio State University College of Medicine, 1934-58.

Dr. RALPH A. KNOUFF, professor and former chairman of the department of anatomy and a 1961 Distinguished Teacher of the university, is retiring after 44 years service on the faculty.

#### **Oklahoma**

Dr. JAMES A. MERRILL, assistant professor of obstetrics and gynecology, has been appointed to the newly-created position of full-time head of the ob-gyn department. He will hold the additional appointment of consultant professor of obstetrics and gynecological pathology in the department of pathology. Dr. Merrill, a Markle Scholar, formerly served as assistant clinical professor of pathology and research assistant in the Cancer Research Institute at California.

#### **Oregon**

A \$517,000 grant to set up an extensive program for training medical researchers and teachers of the future has been awarded the school's department of obstetrics and gynecology by the Public Health Service. Emphasis will be on basic and applied cancer research, according to Dr. HOWARD J. TATUM, director of the new program and professor of obstetrics and gynecology. Dr. RALPH BENSON, professor and chairman of ob-gyn, is co-director. Funds will be used over a five-year period for the education of student, postdoctorate, and postresidency trainees. Students will receive a master's degree as well as doctor of medicine degree on completion of the program.

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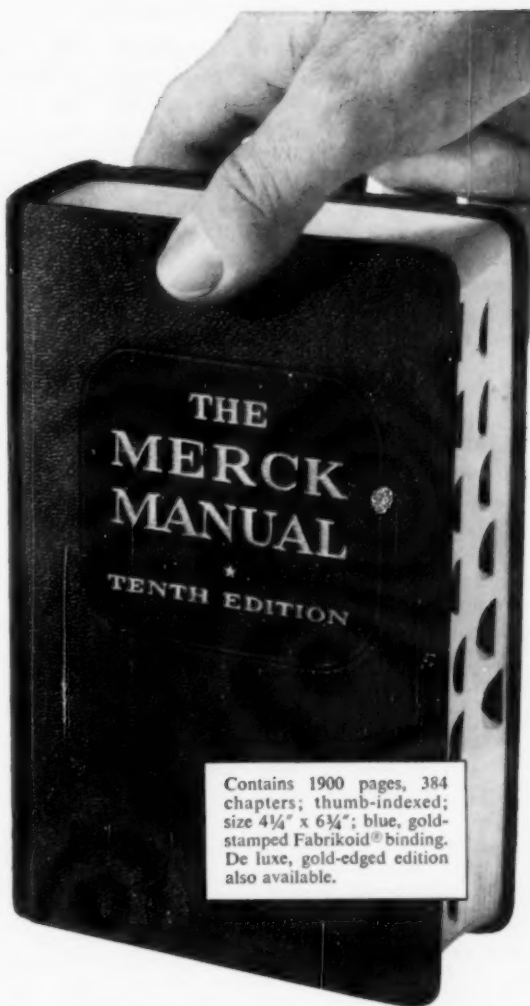
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has been installed at Pitt's School of Medicine. Built in Holland, this is the first model of the microscope in the Western Hemisphere, say Pitt officials. The new instrument, called the EM200, will be used as a tool for biological research. The new instrument will be operated by the department of anatomy, headed by Dr. ALBERT I. LANSING.

A gift in excess of \$1 million from the Richard King Mellon Foundation and the appointment of the first Richard Beatty Mellon Professor in Physiology were announced recently. A new and separate department of physiology will be established. A portion of the funds has been used to create the endowed professorship in honor of the late Mr. R. B. Mellon. Dr. ERNST KNOBIL, assistant professor of physiology at Harvard Medical School, will be the first recipient of the endowed professorship and chairman of the new department.

Dr. EMMANUEL FARBER, American Cancer Society research professor of pathology and biochemistry at Tulane University, will become professor and chairman of the department of pathology at Pitt. He will succeed Dr. FRANK J. DIXON, who is scheduled to join the Scripps Clinic and Research Foundation in LaJolla, Calif., this summer.

Pitt officials announced the appointment of the first full-time professor and chairman of its anesthesiology department. He is Dr. PETER SAFAR, former chief of the department of anesthesiology of Baltimore City Hospitals. Dr. Safar took over his new duties in May. He succeeds Dr. GEORGE J. THOMAS, who served as part-time chairman of the department for the last 28 years. Dr. Thomas retires in June after having been a member of the faculty for 36 years.

#### **Rochester**

The first international scientific conference on training for research in the

processes of vision will be held at the university Aug. 13-19. Supported by a grant from the National Science Foundation, the week-long conference is expected to draw some 70 invited scientists representing universities, industrial firms, and government laboratories in this country and several foreign countries. According to Rochester's planning committee, research in vision now is conducted in many different disciplines; as a result, scientists feel that there is an urgent need to appraise programs of training in this specialty.

#### **South Dakota**

Two new department chairmen were named recently by the school's dean, Dr. WALTER L. HARD. Coming from the University of Pennsylvania is Dr. PAUL F. SMITH, who will take over the chairmanship of the microbiology department. Dr. WILLARD O. READ, a member of the SD faculty, has been promoted to professor and chairman of the department of physiology and pharmacology.

#### **Stanford**

The Max C. Fleischmann Foundation of Nevada has given the university a grant of \$767,000 to complete construction and purchase equipment for the Basic Medical Sciences Laboratories of the School of Medicine. The new grant brings to \$1,192,000 the contribution from the foundation for the laboratories and covers their whole cost.

#### **Temple**

Dr. LEROY E. BURNEY, former United States Surgeon General, has been named to the newly created post of vice president for the health sciences at Temple University. In his new position, Dr. Burney will have administrative responsibilities for all educational activities related to the health sciences, the Temple University hospital and its affiliated hospital relationships.

### Texas Medical Branch (Galveston)

Dr. RAYMOND L. GREGORY, who has served as professor of medicine at the school since 1942, has been appointed chairman of the internal medicine department. He succeeds Dr. JAMES V. WARREN, who resigned to take a similar position at Ohio State University.

### Texas (Southwestern)

Dr. PARKHURST A. SHORE will join the faculty August 1 as associate professor of pharmacology. Dr. Shore is now Deputy Chief of the Laboratory of Chemical Pharmacology of the National Heart Institute in Bethesda.

### Tu'ane

Construction of a new nine-story addition to the School of Medicine began in May. Completion is expected in June

1963. The new addition will more than double the floor space of the present medical school building. Cost of the addition will be \$6 million, while another million is required for land acquisition and equipment. The \$7 million represents the first phase of a \$16 million fund raising program for the medical school which will also make possible renovation of the existing facility and increased endowment. The new construction will permit some expansion of each department in the medical school and afford increased facilities for graduate training and research.

### Vanderbilt

Under a revised fourth year curriculum, the School of Medicine will operate on a full calendar year instead of an academic year. The fourth year class

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will be divided into four sections with three sections in school during any given year. University officials contend this allows more efficient utilization of clinical material available through the University Hospital and affiliated hospitals.

#### **Vermont**

The College of Medicine has approved plans to establish a department of psychiatry and named to head the new department is Dr. THOMAS J. BOAG. Dr. Boag comes to Vermont from McGill University where he is assistant professor of psychiatry. He also holds the position of assistant to the director of the Allan Memorial Institute of Psychiatry. When he takes over his new duties July 1, Boag also will hold the rank of professor of psychiatry. Previously, psychiatry has been a division of the department of medicine in the college.

#### **Med. College of Virginia**

A chair of cardiovascular research will be established at the school under a \$40,000 grant by the Virginia Heart Association and its chapters. The appointment to the chair will be made at a later date. The chair will continue for a two-year period, beginning July 1, with the possibility of its continuance from year to year. The heart association's grant is for salary, equipment and supplies for the initial two-year period. MCV will contribute a minimum of \$5,000 a year.

#### **Wayne State**

Major steps toward the realization of a University Medical Center in the heart of Detroit were announced recently by University President CLARENCE B. HILBERRY. The multi-million dollar plan provides for the redevelopment of a 236-acre site. The major feature of the development is the affiliation of Wayne's College of Medicine with five of the city's hospitals. The uni-

versity will have five votes on a joint governing board, giving it equal weight with the other institutions combined.

The new midtown center, which eventually will cost an estimated \$100 million, will give Wayne the equivalent of a university hospital with more than 2,000 beds which will provide an "ideal research and teaching center" said Hilberry.

Dr. GORDON H. SCOTT, dean of the College of Medicine, was promoted to a newly created post of vice president for medical college development. According to Dr. Hilberry, the appointment was necessary so that the school could be represented in negotiations with various agencies and hospitals in the development of the center. Dr. Scott will retain the deanship, but will be aided in his administrative duties by the new appointment of Dr. ERNEST D. GARDNER as associate dean, thus enabling Dr. Scott to begin his new duties immediately.

Dr. ALAN P. THAL of the University of Minnesota has been named to head the surgery department. He will leave Minneapolis in July to be chairman and professor of surgery and surgeon-in-chief at Detroit Receiving hospital.

#### **Western Reserve**

Dr. JOSEPH M. FOLEY has been named professor and director of the division of neurology effective July 1. He will also direct the division of neurology in University Hospitals. Dr. Foley, who has been professor of neurology at Seton Hall College of Medicine and Dentistry for the past two years, succeeds Dr. CLARK T. RANDT. Dr. Randt left WRU on a leave of absence two years ago to become first director of space medicine research for the National Aeronautic and Space Administration in Washington. He has just resigned that post and returned to Cleveland.

### Wisconsin

A \$2.9 million outright grant for a new cancer research building and facilities has been awarded to the Medical School by the Cancer Research council of the National Cancer Institute. No matching funds are necessary, thus paving the way for immediate plans for construction. Almost \$2.5 million will go into laboratory facilities for basic research being carried on at the McArdle Institute under Dr. HAROLD P. RUSCH. The remaining funds will provide additional bed space for clinical research under the team headed by Dr. ANTHONY R. CURRERI.

Dr. ERWIN R. SCHMIDT will retire in June after 35 years as head of the school's department of surgery.

The Wisconsin Psychiatry Institute will join the school's department of psy-

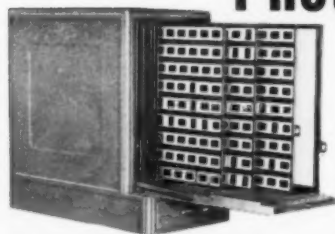
chiatry in sponsoring a 3-day interdisciplinary research conference, Aug. 29-31. A wide range of psychiatric problems will be covered in the 3-day period, with 16 speakers scheduled to participate. Further information may be obtained by writing to the Coordinator of Post-Graduate Medical Education, the Wisconsin Center, 702 Langdon St., Madison 6, Wisc.

### Yale

Dr. EDWARD A. ADELBURG has been appointed professor of microbiology and will become chairman of the department when he assumes his duties at Yale in July. Dr. Adelburg comes to Yale from the University of California in Berkeley where he has been chairman of the department of bacteriology since 1957.

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### **Career Research Professorship Program Being Modified**

NIH has returned all applications for Career Research Professorships after deciding not to make awards in fiscal year 1961 (ending June 30, 1961) in accordance with the specifications outlined in the program, which was announced in October 1960. The decision was reached after extensive consultation with representatives of institutions, culminating in an Inter-Council meeting held on April 25-26. Essentially, the judgment was that the precedents set by making awards would not be in the long-run interest of either institutions or the Federal government, and that the awards would not result in the kind of program envisaged by the Congress.

In accordance with commitments made to and accepted by Congress, the primary objective of this program is to enlarge the number of stable career opportunities in research at satisfactory levels in academic medicine and to do so under circumstances establishing a satisfactory relationship between the responsibilities of universities and those of the Federal government. Based upon experience over the past year, a new program of research career awards is being developed to obviate the problems thus far encountered and to provide for more effective achievement of the central objective of the program. New specifica-

tions will be announced in the near future. Upon reviewing the new guides, institutions will be free to resubmit the applications that are being returned, to substitute other applications, or to both resubmit and add new applications. The precise timing for submittal of new applications and for awards is now being worked out. It is hoped that a substantial number can be made in October or November 1961.

A statement by the Director of the National Institutes of Health, giving a more detailed background on the reasons for the decision will be provided for the July issue of this *Journal*.

### **Health Facilities Program Reports 5 Years of Progress**

The Fifth Annual Report on the Health Research Facilities Program, just published, outlines developments to date and lists approved grants, pending requests, notices of intent to apply, and completed projects through Dec. 31, 1960.

A total of 756 grants were awarded to 321 institutions over the past five years. Grant awards to 71 medical schools were made in support of 149 separate projects.

Projects at the medical schools included facilities for basic science, medical, clinical, dental and surgical research; biochemistry, psychiatry, anatomy, pediatrics and pathology. Other grants were made for research facilities for blood plasma fractionation, radiology, ophthalmology, microbiology, gastroenterology, otological, histology, and chronic diseases.

According to the report, the past year has seen considerable progress in the construction, completion and utilization of

NOTE: Readers desiring copies of publications mentioned in this section of *J. Med. Educ.*, may, unless otherwise noted, obtain them as well as additional information on any subject reported herein, by addressing their requests to the Office of Research Information, Room 115, Bldg. T-19, National Institutes of Health, Bethesda 14, Md.



new, remodeled and renovated facilities. As of Dec. 31, there were 246 completed construction projects at medical schools and other institutions, with a Federal investment of \$33,550,513. The figure has more than doubled in the past year, indicating that many of the larger research facilities, under construction for several years, are now completed.

Single copies of the report, published as House Document No. 110, 87th Congress, 1st Session, are available upon request.

### **Mission Surveys Russian Maternal and Child Care**

Maternal and child care in the Soviet Union has been surveyed by a team of six American scientists and educators who recently toured 30 hospitals and institutes in major Russian cities. The survey, sponsored by the National Institute of Neurological Diseases and Blindness as part of a scientific-cultural exchange program, was made by Drs. Stewart H. Clifford and Fred S. Rosen of the Harvard Medical School, Dr. Allan C. Barnes of Johns Hopkins, Dr. Bernard G. Greenberg of North Carolina's School of Public Health, Dr. Edith L. Potter of the University of Chicago, and Dr. Katherin Bain of HEW.

Russia appears to have a "child-centered" society where the pediatrician holds a position of eminence, the scientists noted. In general, emphasis in the field of mother and child care is on application rather than research.

A detailed report of the mission, including recommendations, is being prepared for future publication, and will be available late in 1961.

### **New Laboratory Design Demonstrated in Mockup**

Continuing studies of laboratory space utilization at NIH have resulted in the development of two experimental mock-

up laboratories demonstrating a new approach to the problem. Design of future laboratories may be strongly influenced by reactions to these experimental units, which are now on display.

Key to the new design is a basic module measuring 5 x 10 ft., which can be used in a variety of flexible combinations which readily yield to modification as research needs change. The easily adjusted units make it possible to tailor laboratory space to the investigator's needs.

The smaller of the two demonstration units, 10 x 20 ft., may be used as a combined work-and-study area that does not require placement of equipment between wall benches. The larger laboratory, measuring 15 x 20 ft., is recommended for investigators who need space for island equipment. Two of the smaller units could be combined to provide space for a full peninsular bench in an area measuring 20 x 20 ft.

The demonstration unit includes an office cubicle utilizing the basic unit of space, 5 x 10 ft., which is set up next to the smaller laboratory to show how privacy may be obtained by partitioning an area only one module wide. The equivalent space could also be used for other purposes.

Gas, water, air, vacuum, and other utility lines have been installed horizontally above the ceilings and along the inside of the exterior wall of the mock-up rooms to demonstrate how utilities can be hung between floors. Utility lines can be dropped through a vertical chase at any multiple of five feet and extended horizontally along the walls. A special raceway with outlet valves has been devised to provide added flexibility.

Should any medical school administrators with responsibility for design or construction of new laboratories be interested in obtaining information concerning details, or wish to inspect the

models, NIH officials will be glad to accommodate them.

#### **Source Book on Prosthetic Heart Valves is published**

The first source book on Prosthetic Valves for Cardiac Surgery, consisting of formal papers and informal discussions presented as an NIH-sponsored conference of heart surgeons held Sept. 9-10, 1960, in Chicago, was recently published.

The volume is edited by Drs. K. Alvin Merendino, University of Washington; Andrew G. Morrow of the National Heart Institute; C. Walton Lillehei, University of Minnesota; and William H. Muller Jr., University of Virginia.

There are now 51 research groups in the U.S. either working directly on valve prostheses or doing closely related work, and the source book is expected to

aid materially in the exchange of information in the field. (*Prosthetic Valves for Cardiac Surgery*, Charles C Thomas Co., Springfield, Ill.)

#### **Institute Issues New Pamphlet on Cataract and Glaucoma**

"Cataract and Glaucoma—Hope Through Research," is the title of a pamphlet for the general public just published by the Public Health Service, and prepared by the National Institute of Neurological Diseases and Blindness.

The 15-page pamphlet describes cataract and glaucoma, stresses the importance of early diagnosis, and tells of research into the cause and prevention of these disorders being conducted by NIH, and by other medical centers in the U.S. and abroad.

Copies of the pamphlet are available upon request.

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## **Items of Current Interest**

#### **AMA Appoints Director for New Program**

Lyman J. Smith, Ph.D., has been named director of AMA's new Honors and Scholarship Program. Dr. Smith, presently executive director of the Illinois State Scholarship Commission at Deerfield, Ill., will assume his new duties July 1.

The Honors and Scholarship Program was recently created by the House of Delegates, AMA's policy-making body, to attract an increasing number of well-qualified young people to the medical profession.

#### **Future M.D.s Woo Students**

Medical students attending the 11th annual convention of the Student Ameri-

can Medical Association in the Pick-Congress hotel in Chicago recently were told how to step up their recruitment programs in an effort to cope with the critically dwindling interest in medicine as a career.

Representatives from the Universities of Michigan and Buffalo, and Marquette University outlined their activities, stressing the importance of personal contact with students at the high school and college level. SAMA members believe they are especially qualified to answer the many questions in the pre-med's mind "because we have just faced and answered those same questions (on finances, qualifications, curriculum, etc.) for ourselves within the past few years." The students are aware however, that the

primary responsibility for solving the problem of medical applicant shortage lies within the medical profession itself as "they must initiate and then throw their full support behind active efforts to attract more of the qualified students to medicine."

In another session, Dr. Floyd C. Bratt, president of the American Academy of General Practice, urged members of SAMA to set their sights on general practice and recognize, realistically, the "demand for trained family doctors." "At the present time," Dr. Bratt said, "the country simply has too many specialists. The ratio of family doctors to specialists is approximately one-to-one. It should be four-to-one." Dr. Bratt maintains that family doctors can care for 85 per cent of all illness and can help lower the cost of medical care by making it unnecessary for patients to "shop around."

SAMA members wound up their meeting by electing William B. Weglicki Jr., the University of Maryland, as president; Donald R. Payne from the University of Texas Southwestern Medical School as vice president; and M. David Thier from the University of Florida College of Medicine, as Treasurer.

Some 1200 students attended the sessions held May 3-6.

#### **Air School Renamed**

The School of Aviation Medicine at Brooks Air Force Base, Texas, has changed its name to the School of Aerospace Medicine. Officials of the USAF Aerospace Medical Center, parent unit of the school at Brooks, state that the new title "more accurately reflects the current mission and the present duties of the school."

The school was founded 43 years ago as the Air Service Medical Research Laboratory. It became the School of

Aviation Medicine in 1922 when it was at Mitchell Field, Long Island, N.Y.

A new course to prepare U.S. military physicians for duty in support of space flight graduated its first class May 26 at the school. The 26-day course familiarizes students with physical and chemical aspects of the upper atmosphere and space, and with the biological impact of these factors on man. A 4-day visit to the Air Force Missile Test Center, Cape Canaveral, Fla., is a part of the new course. There, students got a close-up look at medical operations at an actual space launch facility.

#### **American Heart Association Inviting Applications for Research Support**

Applications from research investigators for support of studies to be conducted during the fiscal year beginning July 1, 1962, are now being accepted by the American Heart Association. The deadline for submitting applications for Research Fellowships and Established Investigatorships is Sept. 15, 1961. This also is the final date on which the Association will accept applications for Research Fellowships. In the future, state and local Heart Associations will assume responsibility for supporting individuals in this category. Those applying in September may request either one or two-year appointments. Applications in the Grants-in-Aid category must be received by Nov. 1, 1961.

Further information and application forms for research awards may be obtained from the Assistant Medical Director for Research, American Heart Association, 44 E. 23rd St., New York 10, N.Y.

#### **Four Medical Schools Receive Psychiatry Grants**

Grants of \$250,000 each toward the endowment of permanent research posi-

tions in psychiatry were awarded to four medical schools by the Foundations' Funds for Research in Psychiatry recently.

The grants go to the University of Chicago, Columbia University, Yale University and the University of Utah. Each of these schools will appoint a research psychiatrist to the newly created position on their faculty.

The Foundation, established in 1953 with headquarters in New Haven, Conn., is the only private foundation in the country devoting all its attention to the support of research in mental health and mental illness.

#### **Papers Invited for International Cancer Congress**

The VIII International Cancer Congress will be held in Moscow, USSR, July 23-28, 1962, under the sponsorship of the International Union Against Cancer. Papers are invited on experimental or clinical aspects of cancer or on cancer control. These papers must not have been published or presented prior to July 23, 1962. The deadline for submission of abstracts is Nov. 1, 1961, the

original and two copies to be sent to Moscow, and an original and five copies to the U.S. National Committee on the International Union Against Cancer.

Further information may be obtained by writing to Dr. Harold F. Dorn, Gen. Secretary, International Union Against Cancer, National Institutes of Health, Bethesda 14, Md.

Travel allotments will be available to a limited number of scientists and physicians residing in the U.S., who may require such assistance. The grant will be designed to cover round trip economy jet fares, an 11-day per diem allowance, and reimbursement for the \$30 registration fee.

#### **Walter Reed Hospital Names New Commander**

Brigadier General Floyd Lawrence Wergeland, a 1932 graduate of the School of Medicine at the College of Medical Evangelists, has been named commander of Walter Reed General Hospital. General Wergeland has been Executive Director of the Office for Dependents' Medicare. He replaces Brigadier General Clinton S. Lyter.

# Individual Membership

in the

Association of American Medical Colleges

In recent years the activities of the Association of American Medical Colleges have expanded far beyond the original considerations of administrative problems to the many and varied problems of medical education as encountered by the entire medical school faculty.

The expansion of activities has been due to the growing complexity of medical education—the swift development of the medical sciences, the rapid accumulation of new knowledge to be taught, the pressure for more graduates, the changing patterns of medical care, and countless other factors.

Because of these factors, the AAMC recognizes the need for a professional organization to represent not only the medical schools but the faculty members of these schools. Through the offering of individual membership, the AAMC provides you with the opportunity to exchange ideas, opinions and information through the Annual Meeting, Teaching Institutes, and other activities of the Association.

The AAMC also encourages you to attend the Annual Meeting, not only to meet with others who are teaching in your field and discussing the educational problems that are peculiar to it, but also with the idea of becoming familiar with the entire field of medical education as one of society's most important enterprises. The time has come when teachers of medicine must meet together and discuss the problems and activities that are peculiar to medicine as education just as they are accustomed to meet and talk about medicine as science.

As an Individual Member you are entitled to receive *The Journal of Medical Education*, the only publication devoted exclusively to medical education. The Journal also carries the latest news from the medical schools and provides a valuable service through its Personnel Exchange column. You receive the yearly *Directory*, the Proceedings of the Annual Meetings, and a monthly newsletter which will keep you informed on items of current interest in the field of medical education, both nationally and internationally.

Individual Membership, at only \$10 a year, is open to any person who has demonstrated a serious interest in medical education over a period of years. All the privileges of membership and a provisional membership card are granted immediately after payment of the \$10 fee, although confirmation must await official action at the next Annual Meeting.

To obtain membership, fill out the application form below, append check for \$10, and return to the Association's central office at 2530 Ridge Ave., Evanston, Ill.

## INDIVIDUAL MEMBERSHIP APPLICATION

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College or other connection: \_\_\_\_\_

# PERSONNEL EXCHANGE

## Faculty Vacancies

**PREVENTIVE MEDICINE:** Full-time appointment, with epidemiologic orientation desired for teaching program with opportunities for research participation and development. Some background in public health or community organization desirable. Interest in teaching should be primary. Rank and salary based on qualifications and ability. Address: Jonas N. Muller, M.D., Chairman, Department of Preventive Medicine, New York Medical College, Fifth Avenue at 106th Street, New York 29, N. Y.

**PHARMACOLOGIST:** Positions open on medical school faculty for July 1, 1961. Rank of instructor or assistant professor, depending on qualifications. Teaching responsibilities limited to nursing students and small medical classes. Active graduate training program. Facilities available for independent research program. Address: Dr. Frank C. Ferguson, Jr., Dept. of Pharmacology, Albany Medical College, Albany 8, N. Y.

**PHYSIATRIST:** To assume direction of department of physical medicine and rehabilitation of Mount Sinai Hospital, with teaching responsibilities at affiliated Chicago Medical School. Affiliated with Rest Haven Rehabilitation Hospital. Will also be consultant to affiliated homes for the aged. Challenging opportunity for a Board Qualified or Board Eligible Physiatriest interested in developing a complete program including a residency in P. M. & R. Apply: Director, Mount Sinai Hospital, Chicago 8, Ill.

**PSYCHIATRIST:** Faculty appointment in medical school for psychiatrist, preferably with experience since residency. Must be interested in clinical teaching of residents and students. Time available for own treatment of in-patients or out-patients, also for research. Laboratories available, also personal and didactic analyses and opportunities for full psycho-analytic training locally. Unique opportunity to join an active and established department with unlimited opportunities. Salary competitive. Address: V-109.

**PREVENTIVE MEDICINE:** Full-time appointment, at associate, or full professorial level depending upon qualifications and ability, to head up an established, ongoing department of postgraduate education with opportunities for teaching and research participation and development in the department of preventive medicine of a university medical school. Some background in preventive medicine or administrative medicine is desirable. Salary around \$14,000 plus fringe benefits. Address: V-110.

**OBSTETRICIAN-GYNECOLOGIST:** Board eligible or Board certified obstetrician-gynecologist for full-time assistant or associate professorship in well established university department. Salary based on training and experience. Modern physical plant with research building. Adequate clinical material and opportunity to develop areas of personal interest. Send curriculum vitae. Address: V-111.

**INTERNIST:** To direct Pulmonary Disease Section of a large general hospital closely affiliated with medical school. Faculty appointment. Broad clinical, research, and teaching opportunities. Active Pulmonary Function Laboratory. Contact: Chief, Medical Service, V.A. Hospital, Albany, N. Y.

**MEDICAL SERVICES DIRECTOR:** To have full charge of all medical and surgical activities for Kern County General Hospital System, under administrative direction of Hospital Administrator; direct and coordinate medical services, supervise operation of intern and resident teaching programs. M.D. degree from approved medical school, approved internship, completion of approved residency and three years experience in practice of medicine, two years of which must have been in teaching or supervisory capacity. Certification by an American Board. California M.D. license. Salary \$15,228 to \$18,504 annually. Write to: C. Leon Bryson, Kern County General Hospital, 1830 Flower St., Bakersfield, Calif.

**RADIOLOGIST:** To assist staff radiologist in operation of X-ray department at Kern General Hospital including supervision of technical employees, assisting in resident physician training. Active department. Possession of valid license to practice medicine in California required; certification or eligibility for certification by American Board of Radiology is desirable. Salary \$11,928 to \$14,508. Write to: Kern County General Hospital, 1830 Flower Street, Bakersfield, Calif.

**MEDICAL EDUCATION DIRECTOR:** Board Certified or comparable to requirements for Board Certification to direct an approved internship and residency program. Two hundred sixty-six bed community hospital with medical school affiliation in University City. Write and include curriculum vitae: Arthur V. Crandall, Administrator, Brackenridge Hospital, Austin, Texas.

**EPIDEMIOLOGIST:** A newly established, full-time faculty position now available. Candidates with medical degree preferred. Background and experience in epidemiology and biostatistics required; background in infectious disease studies with overseas field experience desirable. Duties will include organizing and directing training program in epidemiology and biometrics at a World Health Training Center now under development at this medical school. Opportunities will be available for field studies at overseas base. For further information, contact: George Entwistle, M.D., Chairman, Department of Preventive Medicine and Rehabilitation, University of Maryland School of Medicine, Baltimore 1, Md.

**MEDICAL EDUCATION COORDINATOR:** Progressive general hospital in East desires full-time M.D. to coordinate expansion of educational program for interns and residents; educational potentialities unlimited; abundant service patients; 40 Boarded specialists representing all fields; research program contemplated; cardiac catheterization under development. Address: Paul G. Wedel, Administrator, The Williamsport Hospital, 777 Rural Avenue, Williamsport, Pa.

**BACTERIOLOGIST:** University Hospital has a vacancy for a medically qualified bacteriologist. Appointment also carries a university teaching position. Salary \$10,000-\$14,000 per annum. Applicants should have hospital experience. Applications stating date of birth, qualifications, experience, present appointment, and the names of three references should be sent to the Director of Bacteriology, University Hospital, Saskatoon, Saskatchewan, Canada.

**MEDICAL TECHNOLOGIST:** ASCP Registered medical technologist (female) with Bachelor's degree and 2 years experience to work in curriculum of medical technology, department of pathology. Position is chiefly assisting in administration and teaching. Salary open, dependent upon qualifications. Reply: Dr. J. F. Kuzma, Director of Department of Pathology, Marquette University School of Medicine, Milwaukee 3, Wisc.

**MEDICAL LIBRARIAN:** University desires Medical Librarian at an initial salary of \$6,500. The successful candidate will receive faculty status equivalent to that of departmental chairman in the Faculty of Medicine. Duties will include full responsibility for the administration of the Medical Library. Minimum qualifications must include the Medical Library Association Grade I certificate, or its equivalent, with some experience in library administration. Applications should be addressed to the Chief Librarian, Macdonald Memorial Library, Dalhousie University, Halifax, Nova Scotia.

**BIOCHEMIST:** Junior staff position open in expanding biochemistry department of mid-western medical school. Teaching and research. Opportunity for advancement. Salary competitive. Valuable fringe benefits. Address: V-112.



To aid in solution of the problem of faculty vacancies, MEDICAL EDUCATION will list persons and positions available, as a free service. The school department or person may have the option of being identified in these columns or of being assigned a key number for each position listed. Mail addressed to key numbers will be forwarded to the person or department listing the request.

Information for these columns should reach the Personnel Exchange, Journal of Medical Education, 2530 Ridge Avenue, Evanston, Illinois, not later than the 10th of the month which precedes the month in which the listings will appear.

## Personnel Available

**PEDIATRIC CARDIOLOGIST:** Age 39, qualified for examination by American Board of Pediatric Cardiology. Now full-time, desires half-time university appointment. Catheterization laboratory necessary. Address: A-474.

**PHYSICIAN-PHYSIOLOGIST:** M.D., Ph.D. Age 50. Extensive experience in cardiopulmonary research, clinical and laboratory; teaching and administration; numerous publications; research grants. Desires position with responsibility to develop research and teaching program. Address: A-476.

**PHYSICIAN:** M.D., D.P.H. Extensive experience in epidemiological research, teaching and administration in academic and health department settings. Published articles; book in preparation. Seeks senior university appointment offering opportunities in broad field of preventive medicine. Address: A-477.

**INTERNIST:** M.D., Ph.D. Currently Assistant Professor of Medicine with administrative and teaching responsibility for attending and house staff and medical students on large medical service. Active, well-supported, independent research program. Training includes N.I.H. and the University of Chicago. Numerous publications. Desires geographic full-time position or equivalent in medical school or affiliated hospital with facilities for expanding both clinical and laboratory aspects of research program. Address: A-478.

**INTERNIST:** Certified; also certified in cardiovascular disease. Experience in medical school teaching as assistant professor at student, intern, resident and practicing physician level. Desires full-time position in teaching or community hospital and/or medical school. Address: A-479.

**INTERNIST-CARDIOLOGIST:** Board certified. Age 35. One year training in clinical cardiology and one year in cardiovascular laboratory — Harvard and Mayo Clinic. Now university instructor in England, returning shortly to U.S. Interested in practice, teaching, director of medical education. Address: A-480.

**PATHOLOGIST:** Age 56. Voluntarily retiring as professor and department head, University Medical Center, July 1, 1961. Twenty years teaching experience. Thoroughly experienced in service work. Desires position as teacher combined with service work, preferably surgical pathology. Address: A-481.

**PATHOLOGIST-ADMINISTRATOR:** Pathologist with excellent full-time academic background in administration, medical education, research and service responsibilities. Experience includes professorship and chairman department of pathology, development of research, curriculum, teaching methods, services, and coordinated medical school activities. Extensive publications. Desires teaching position with opportunity to aid in development. Eastern location preferred. Address: A-482.

**INTERNIST:** Certified. Age 35. Currently on faculty of Eastern medical school. Experience in private practice and administrative medicine. Desires appointment in teaching hospital and/or medical school with opportunities for clinical research in cardiovascular disease, teaching and administrative responsibilities. Address: A-483.

**PSYCHIATRIC SOCIAL WORKER:** Female, M.S., personal psychoanalysis. Three years experience in delinquency problems. Current appointment in medical school involves participation in clinical and teaching program in department of psychiatry. Desires similar position or other psychiatric clinical appointment. Southern California preferred. Available July 1, 1961. Address: A-484.

**INTERNIST:** Age 34, single, male. Currently on faculty of British Colonial medical school. Postgraduate training in clinical medicine and research. Experience in cardiac catheterisation and haemodynamic investigations; also in life insurance medicine and some private consultative practice. Numerous publications. Desires faculty appointment or fellowship with opportunity for cardiological investigation. Address: A-485.

**OBSTETRICIAN-GYNECOLOGIST:** Age 35, PBK. AOA. Desires head administrative appointment in medical school or affiliated hospital, with opportunity to develop department. Ability in creative research, teaching, and operative gynecology. Institution must allow to be earned or pay a minimum of \$30,000. Address: A-486.

**SURGEON-THORACIC:** Age 34. Currently engaged in thoracic surgery residency training which includes all phases of pulmonary resectional surgery. Wide experience in heart surgery. Desires full-time medical school appointment, balanced between teaching, research, and dog laboratory research. Address: A-487.

**MICROBIOLOGIST:** Ph.D. Many years experience in clinical bacteriology and mycology. Excellent background in parasitology and virology. Well qualified in many phases of public health microbiology. Medical school and A.S.C.P. teaching experience as well as administrative responsibilities. Publications. Desires challenging appointment in medical school. Address: A-488.

**ANATOMIST:** Ph.D. Male, age 43. Fifteen years teaching experience. Currently assistant professor teaching neuroanatomy and gross anatomy in school of medicine and dental medicine. Also experienced in histology and physiology. Trained in educational methods and testing. Desires opportunity for teaching and research in anatomy department or in a correlated pre-clinical medical program. Address: A-489.

**OBSTETRICIAN-GYNECOLOGIST:** M.B.B.S., India, F.R.C.S. Canada, university trained in U.S., immigrant to U.S. Desires teaching position, department of obstetrics and gynecology of a hospital with active educational program. Address: A-490.

**MEDICAL PHOTOGRAPHER:** A.B., age 35. Ten years experience in medical photography (including 7 years with Veterans Administration). Special training in photomicrography. Fluent knowledge of German. Desires position with medical school and/or hospital affiliated with medical school. Good references. Resumé and references on request. Address: A-491.

**PHYSIOLOGIST-PHARMACOLOGIST:** M.D., age 31. Desires research position in the fields of neurophysiology or neuropharmacology. At present, postdoctoral fellow in Eastern medical school. Address: A-492.

**PHYSIOLOGIST:** Ph.D., assistant professor. Long-term research program with staff of four based on

continuing large N.I.H. grants. Basic and clinical aspects of endocrine physiology. Major physiology teaching responsibilities and experience. Seeks associate professorship in physiology. Address: A-493.

**PHARMACOLOGIST:** M.D., Punjab University, India. Age 27, married, one child. Publications, *Ind. J. Med. Sc.* and *J. Am. Pharm. Assoc.* Presently research assistant, department of pharmacology, University of Agra. Desires position with U.S. medical school with opportunity for postdoctoral study. Address: A-494.

**PSYCHIATRIC SOCIAL WORKER:** M.A., University of Chicago School of Social Service Administration. Desires position as teacher of psychiatric social work to medical students. Twelve years experience as chief psychiatric social worker in two medical schools. Address: A-495.

**BIOPHYSICIST-PHYSIOLOGIST:** Ph.D., M.S., E.E., wishes faculty appointment, teaching and research. Publications, books. Areas of research interest—bioelectric studies, origins of congenital heart disease, biomedical engineering. Address: A-496.

**PHYSIOLOGIST-PHARMACOLOGIST:** Ph.D., faculty member of medical school. Teaching experience. Research in endocrine physiology and pharmacology of endocrine preparations. Publications and Society memberships. Desires teaching and/or research position with opportunity for independent research. Address: A-497.

**MICROBIOLOGIST-IMMUNOLOGIST:** Research and teaching experience in bacteriology and parasitology. Presently on medical school faculty. Desires faculty appointment appropriate for qualifications with opportunity for independent research. Would also consider a position in a medical foundation or in a City, County, or Federal Institution affiliated with a medical school. Address: A-498.

**PREVENTIVE MEDICINE-PUBLIC HEALTH:** Physician with M.D., Dr. P.H. degrees desires senior teaching position on medical school or public health school faculty. Numerous publications. Previous research, teaching, administrative and health department experience. Special interests are epidemiology, preventive medicine, and biostatistics. Address: A-499.

**INTERNIST:** M.D., M.S. in Med. Certified. Age 46. Wishes to abandon lucrative private practice of 18

years for full-time (or half-time) medical school appointment that includes teaching, OPD, and hospital practice. Extensive clinical experience and original publications in psychosomatic medicine. Capable of organizing and heading a psychosomatic division that will integrate general medicine and psychiatry. Address: A-500.

**ANATOMIST:** Ph.D. (Anatomy) March 1961. M.S. in Zoology and B.S. in Biology. Age 39, married, child. Presently teaching biology in midwest. Prefers return to anatomy since Ph.D. completed. Twelve years full-time teaching experience, including four in anatomy (histology, embryology, gross, comparative, and neurology). Publications. Research interests in histochemical aspects of mammalian development; program in progress. Prepared to contribute to graduate research training programs. References. Address: A-501.

**PHYSIOLOGIST:** Ph.D., age 39. Desires faculty appointment, teaching and research. At present associate professor of physiology in medical school. Teaching experience and research in respiratory physiology and neuropharmacology. Salary open. Address: A-502.

**PHYSIOLOGIST:** Ph.D., age 41. Also E.E. degree in electronics. Wide experience in cardiopulmonary and cardiac electrophysiology as well as medical instrument design. Member of American Physiological Society and Institute of Radio Engineers, etc. Assistant professor of physiology. Seeks faculty position in medical school or in a cardiopulmonary laboratory associated with teaching and research. Address A-503.

**GASTROENTEROLOGIST:** Certified in both internal medicine and in gastroenterology. Trained in large clinic and university. Experience includes private practice. Desires academic position. Address: A-504.

**PATHOLOGIST:** Age 39; Certified (FCAP 1961). Also three years internal medicine. Experienced director of hospital laboratory and director, school of medical technology. Experienced in new laboratory designing. Extensive work in all fields of medical education, recruiting, all medical specialties, research personnel. Interested in cancer research etiology, early diagnosis, genetics, especially leukemias and lymphomas. Prefer establishing laboratories and programs in organizations or institutions, new or in building process. Address: A-505.

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1. Cloin, N. W.: *Pediat. Clin. North America*, Nov., 1954, pp. 949-962.

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